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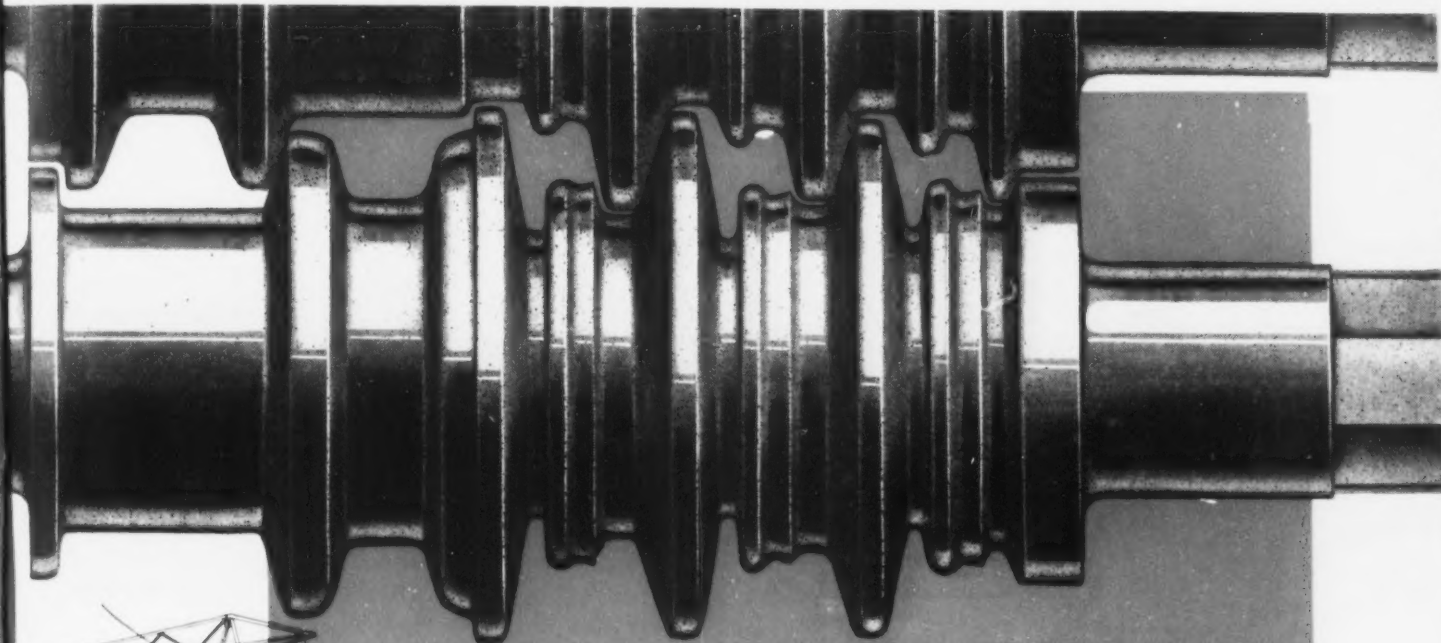
PUBLICATION

# The Iron Age

THE NATIONAL METALWORKING WEEKLY

October 30, 1952

CONTENTS PAGE 2



## Ohio Rolls

SHAPING METAL FOR ALL INDUSTRY



### STEPPED-UP PRODUCTION

Greatly-enlarged plant facilities at Lima mean more Ohio Rolls to enhance your production. Choose from 11 types of Ohio Iron and Steel Rolls:

Carbon Steel Rolls  
Ohioloy Rolls  
Ohioloy "K" Rolls  
Holl-O-Cast Rolls  
Chilled Iron Rolls

Denso Iron Rolls  
Nickel Grain Rolls  
Special Iron Rolls  
Nioloy Rolls  
Flintuff Rolls

Ohio Double-Pour Rolls

## THE OHIO STEEL FOUNDRY CO

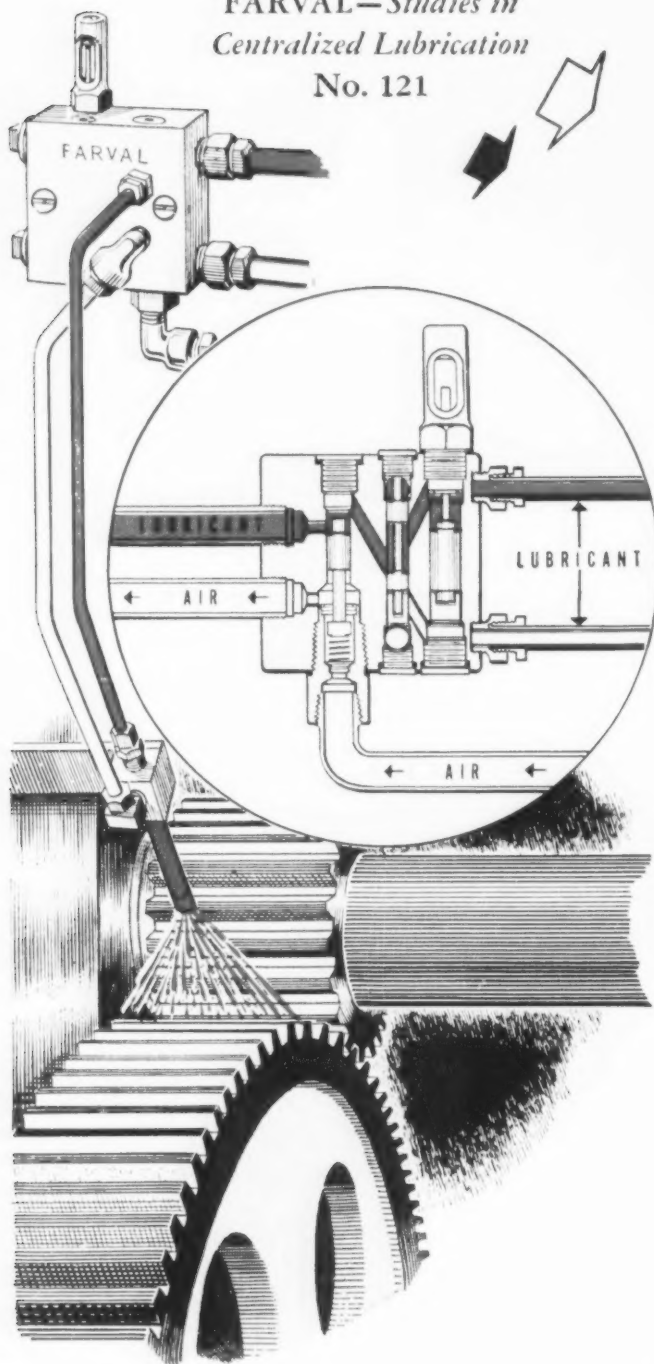
LIMA, OHIO • PLANTS AT LIMA AND SPRINGFIELD, OHIO



# FARVAL SPRAY VALVE

## meters lubricants to slide surfaces and open gearing

FARVAL—*Studies in  
Centralized Lubrication*  
No. 121



These diagrams illustrate the action of the Farval Spray Valve in delivering a measured quantity of oil onto open gearing. One or more spray valves can be incorporated readily into any Farval Dualine System. Or spray valves can be installed independently, served by their own Farval manual or automatic central pumping unit.

**T**HE value of controlled spraying of lubricant on open gearing, slide surfaces, etc., with the Farval Spray Valve is proved by two years' successful experience in hundreds of plants.

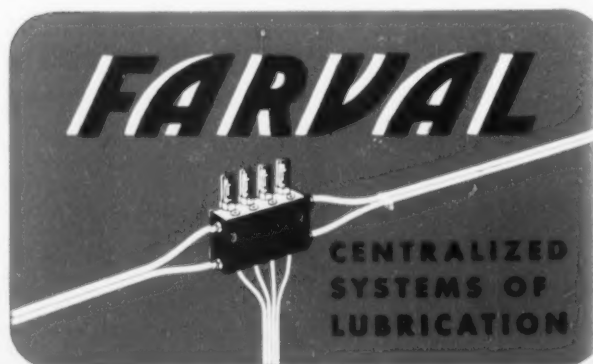
By an ingenious adaptation of the familiar Farval Dualine Valve, either grease or oil is sprayed through a nozzle—on any desired area, in any desired amount, and at any desired interval. The spray valve unit can be added at any point in a regular Farval Dualine System wherever compressed air is available—or a complete system may consist entirely of spray valves, served by either manual or automatic central pumping unit.

Compressed air from the supply line is directed through the spray valve, which meters air to the delivery nozzle just as lubricant is metered. By a unique arrangement, the lubricant valve also turns on and shuts off the air. Thus the quantity of air used is limited to the amount needed to spray each delivery of oil or grease, without exhausting or reducing pressure. Positive cut-off of lubricant by the Farval valve after each delivery eliminates bleeding from the nozzle—no waste, no mess, no trouble.

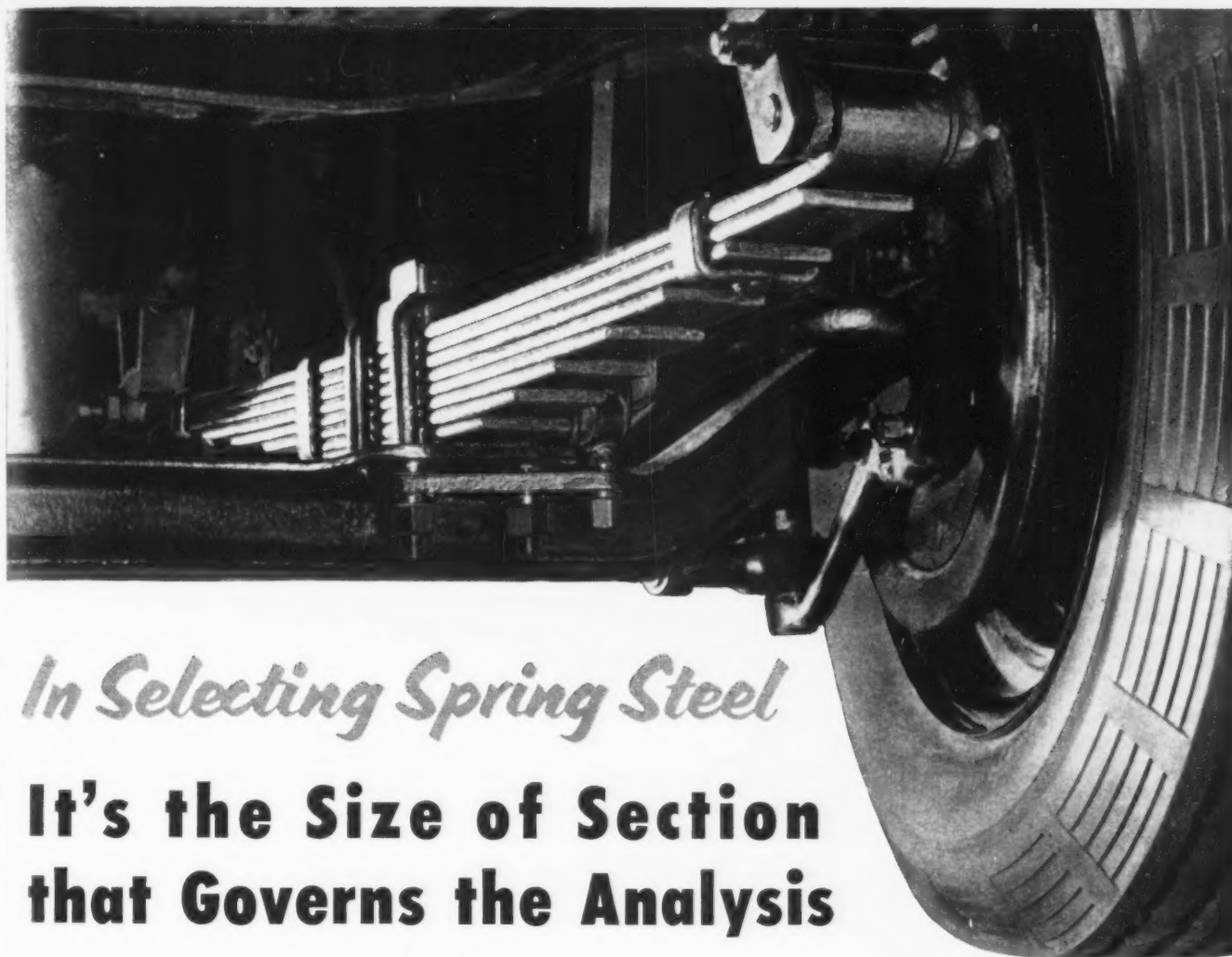
The Farval Spray Valve has been thoroughly tested in service and is now in use on a wide variety of machines and equipment. It has demonstrated its ability to supply lubricant efficiently and economically to open gearing, slide surfaces, in fact, wherever a standard Farval Dualine closed system is not readily adaptable.

Write for a copy of Farval Spray Valve Bulletin No. 60 for a full description, with illustrative diagrams and installation data. The Farval Corporation, 3252 East 80th Street, Cleveland 4, Ohio.

*Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.*







## *In Selecting Spring Steel*

# **It's the Size of Section that Governs the Analysis**

The size of a spring section is the factor that often determines the grade of steel for a given spring application.

It is considered sound practice to use a grade whose alloy content is consistent with the thickness of the finished section. A steel of medium or low alloy content will generally be adequate for use in a thin spring section. Heavier springs, on the other hand, take steels of richer alloy content to quench out properly.

Although this principle may sound simple, it calls for a careful study of spring sizes, stresses, forming methods, and heat-treatment. In this connection we will be glad to help. Our metallurgists will give you unbiased advice based on their familiarity with all grades of spring steels.

When you are in the market for alloy steels, remember that Bethlehem manufactures all AISI grades as well as special steels.

SPRING WEIGHT	ANALYSIS
Light Spring Sections	9255
	5150
	4063
	TS 8160
Medium Spring Sections	6150
	8650
	9260
	TS 8650
Heavy Spring Sections	9262
	8655
	TS 8655

**BETHLEHEM STEEL COMPANY**  
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation



# **BETHLEHEM *ALLOY* STEELS**

October 30, 1952

# The Iron Age—DIGEST

Vol. 170, No. 18  
October 30, 1952

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THE IRON AGE, published every Thursday by the CHILTON CO. (INC.), Chestnut & 56th Sts., Philadelphia 39, Pa. Entered as second class matter, Nov. 8, 1932, at the Post Office at Philadelphia under the act of March 3, 1879. \$8 yearly in United States, its territories and Canada; other Western Hemisphere Countries, \$15, other Foreign Countries, \$25 per year. Single copies, 35¢. Annual Review and Metal Industry Facts Issue, \$2.00. Cable: "Ironage," N. Y.

## NEWS DEVELOPMENTS

### NOT HAVING A DISPENSARY COSTS TOO MUCH—P. 31

Small manufacturing plants think medical departments are too expensive. But statistics indicate it may cost more not to have one. Costs of a dispensary average less than 1 pct of payroll but only 5 pct of small plants provide medical service. Morale and community relations factors are also important.

### NEED MAKES FLUORSPAR STRATEGIC MINERAL—P. 35

High-flying demand exerted on fluorspar by aluminum, steel, plastics, ceramics and chemical industries has pushed fluorspar into the strategic mineral class. The shortage was belatedly recognized. It is worst in the most highly concentrated acid grade. Expanded imports will help out soon.

### TENNESSEE FIRM BIDS TO ENTER ALUMINUM—P. 38

Wheland Co., of Chattanooga, Tenn., has put in its bid to enter the aluminum production field. It told DPA it wants to build a plant in its area to make 150 million lb of aluminum. It listed advantages of its Tennessee site. These included power availability, labor, location and transportation.

### REDS HAVE SOLID SUPPLY OF STEEL ALLOYS—P. 40

Iron Curtain countries appear to have sufficient supplies of almost all types of steel alloying materials to meet armament and industrial needs. Quality of Red alloy steel matches Western standards. Russia's most critical alloy shortage is cobalt but this is not slowing production.

### INDUSTRY WILL FEEL IMPACT OF DRAFT CALLS—P. 53

Effects of future military draft calls on the U. S. home front and industry are starting to shape up. Top Army officials say 10 million men will be called in the foreseeable future. This could mean changes in residence and buying habits for about 30 million citizens. No time limit has been set yet.

### CANADIAN INDUSTRY EXPANSION GOES AHEAD—P. 58

Industry in Canada keeps on growing. Plants newly completed, being built or on the drawing boards represent a total value of over \$1 billion. The expansion is being backed by foreign, U. S. and Dominion sources. Ottawa is planning to stop direct financing, but will furnish other types of encouragement.

# of the WEEK in metalworking

## ENGINEERING & PRODUCTION

**HARD AL FINISHES RESIST WEAR, ABRASION—P. 81**  
Harder, thicker and denser anodic surface coatings, having considerably better resistance to wear and abrasion, are now available on aluminum. These hard oxide coatings on light-weight aluminum may replace heavier metals for some gears, slides, pinions and other aircraft applications.

**AUTOMATIC WELDING SPURS FRAME OUTPUT—P. 84**  
Conversion to automatic submerged-arc welding for automobile frame construction has increased man-hr output 5 times. Each machine has 3 pairs of welding heads, produces 80 box-type frame side rails per hr. Welds are stronger, more uniform. Requires 25 pct of floor space previously used.

**TI CASTING: SHELL MOLDED REFRACTORIES—P. 88**  
New mold materials are needed for titanium castings. Under Ordnance sponsorship, Battelle has tested many compounds. Most promising are shell molded mixtures of stabilized zirconia and fused zirconia containing 4 pct resin, and without mold washes. Surface finish is good.

**NEW LUBRICANT IMPROVES DIE LIFE, FINISH—P. 94**  
Hard chrome-plated dies used in drawing a 6.5-in. deep, 3-in. diam shell from 0.065-in. annealed 1010 blanks had short life. Pickup on dies caused scuffing and scratches on the shells. Use of a new die lubricant is reported to have increased number of pieces per dressing 11 times.

**SPECIAL STEEL PIERCING METHODS APPRAISED—P. 96**  
Two methods of piercing oil well casings to increase seepage from adjoining areas—bullet and jet charge—are appraised. Bullet perforation leaves a clean hole of constant diameter. Jet perforation leaves a rough jagged hole. Residual stress near perforations was very high.

**NEXT WEEK—ALLOY TOOL STEELS WITH NITROGEN**  
Use of nitrogen as an alloying element in special steels has practically doubled tool life under certain conditions, Russian metallurgists claim. Nitrogen, which must be used with aluminum for best results, is reported to increase stability of austenite in some conditions.

## MARKETS & PRICES

**FREIGHT CAR SHORTAGE CAUSES STEEL PILEUP—P. 34**  
Freight car shortage is offsetting record-breaking steel production. Problem is particularly acute in Pittsburgh area. Traffic managers do not expect situation to ease for several months. Car manufacturers have made appeal to National Production Authority for rating help.

**FARM EQUIPMENT BACKLOGS EASE STEEL PINCH—P. 37**  
Production cutbacks made by farm machinery manufacturers should ease pressure on steel supply. Equipment inventories are high, but producers are hoping sales will climb again. Many believe market has returned to normal and that supply will balance demand in most machinery lines.

**CONVERSION STEEL IS KEY TO AUTO OUTPUT—P. 48**  
National Production Authority steel allocations to the automotive industry for first quarter 1953 insure that conversion is still here. Tickets issued provide enough steel for only 630,000 cars, but the industry may build 1,250,000 if it can find the steel. Big question: Can conversion fill the bill?

**U. S. TOOL BUILDERS GIRD FOR BUYER'S MARKET—P. 61**  
As the gap between order backlog and shipments narrows, machine tool builders are getting set for a competitive market in 1953. Competition is already here for some firms. Others are readying new models to introduce next year, in spite of the costs. Best market should be in replacement tools.

**STEELMAKERS' MARKET OUTLOOK OPTIMISTIC—P. 105**  
Steelmakers know their break-neck production pace is bound to catch up with demand. But it isn't worrying them too much. Big modernization programs have made their plants more efficient. And much attention has been given to reducing operating costs. They know how they'll meet a lower ingot rate.

**ZINC AND LEAD MARKETS STILL DESCENDING—P. 108**  
The London lead market is still making itself felt in trade circles here. U. S. prices dropped 1/2¢ last week to a 13.50¢ price at New York, 13.30¢ at St. Louis. It's the third time this has happened this month, the total decline for October being 2.50¢ per lb. Zinc is off another 1¢ to 12.50¢ per lb.



# Only B. F. Goodrich makes the grommet belts that cut costs 20 to 50%!

*Save 3 ways! Investigate today!  
Write or mail coupon*

You save belt costs because belts last longer, save production costs because machines keep running with fewer interruptions, save maintenance costs because they need less attention.

Patented grommet belts by B. F. Goodrich represent the only basic change since invention of the V belt. Belts last 20 to 50 per cent longer, depending on service. (The more severe the service, the greater the increase over ordinary belts.) Grommet belts have more rubber; they're more flexible, give better grip, less slip.

#### *What is a grommet?*

A grommet is like a giant cable except that it's *endless*—a cord loop built up by winding heavy cord on itself. There is no overlapping cord *section* as in all ordinary belts. Most belt failures occur in these sections where cords overlap!

#### *All cords put to work*

Each of the two grommets and every part of a grommet carry their share of

the load. In ordinary belts under high tension the center cords "dish" because tension is greater near the driving faces. Dished cords are doing less work, not pulling their share. Grommet belts have no center cords, there is no dishing—therefore much more strength in proportion to cord volume—and less stretch. Grommet belts stretch, on an average, only about one-third as much as ordinary belts.

#### *Better grip, less slip*

Grommet belts have more rubber in relation to belt size. Without any stiff overlap, they're more flexible, grip pulleys better. Size for size, grommet belts give  $\frac{1}{2}$  more gripping power, pull heavier loads with a higher safety factor. Because there is less slip, there is also less surface wear.

#### *Send for proof*

Send the coupon for a set of reports telling users' experiences and showing actual installations where grommet belts outlasted all others. Some typical cases:

"... within a few days ordinary belts had stretched ... After six months of 24-hour-a-day service BFG grommet belts haven't stretched at all ..."

"Ordinary belts lasted only 5 or 6 weeks ... B. F. Goodrich grommet belts are in their sixth month of service ..."

"Previous belts suffered from shock loads, wore out fast ... BFG grommet belts have been in service 2 years with no shut-downs ..."

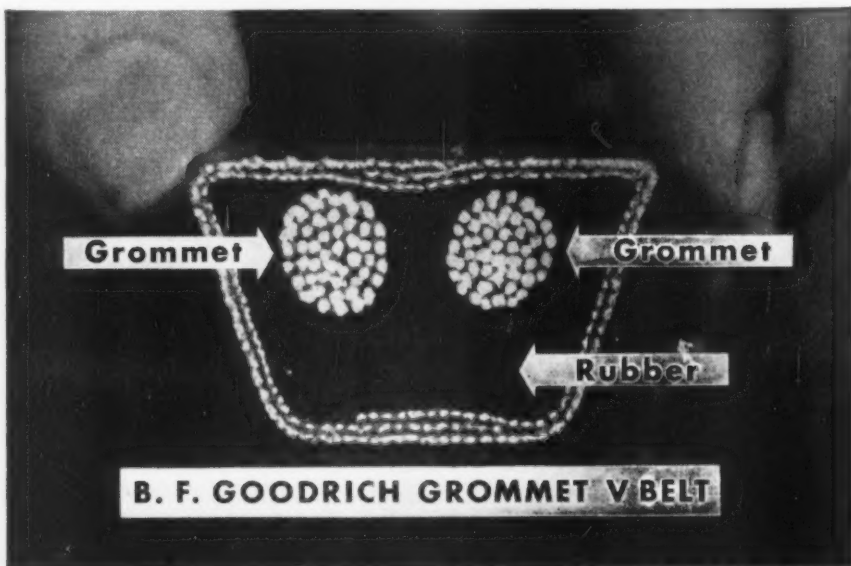
There are hundreds of cases like these.

#### *They cost no more*

BFG grommet belts cost not one cent more than others. The savings they make for you are clear profit. They are made in C, D and E sections. They are patented by B. F. Goodrich. No other V belt is a grommet belt (U. S. Patent No. 2,233,294).

Write, send the coupon or see your B. F. Goodrich distributor. (He will show you his "X-ray" belt that shows the grommet construction clearly.)

**Grommet V-Belts BY  
B.F. Goodrich**  
**FIRST IN RUBBER**



The B. F. Goodrich Company  
Dept. 1A-10  
Akron, Ohio

- ☐ Send set of reports telling users' experiences and showing actual installations proving that B. F. Goodrich grommet belts outlast all others.
- ☐ Have distributor show me the "X-ray" belt that shows how B. F. Goodrich grommet belts are made.

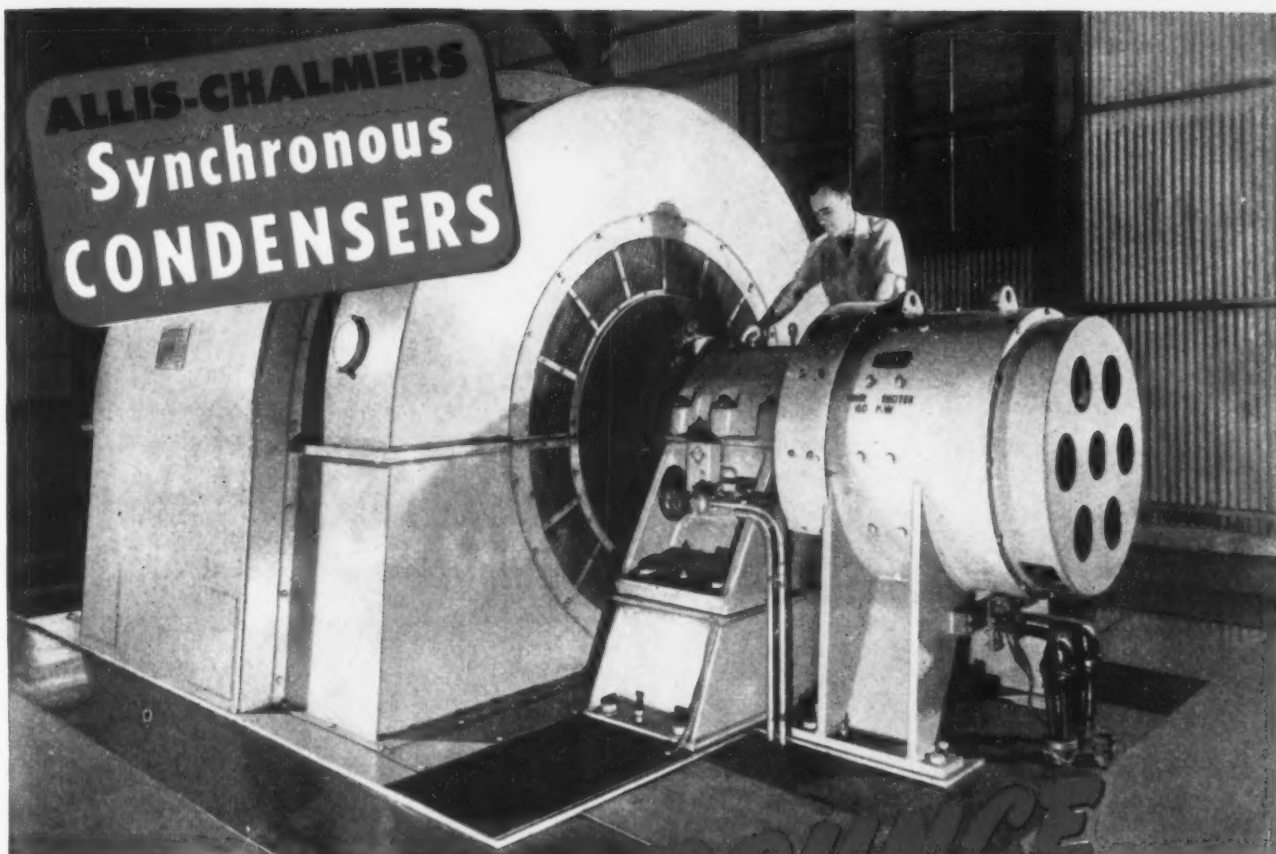
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City \_\_\_\_\_

State \_\_\_\_\_



# FOR LESS BOUNCE TO THE ARC

**this low reactance condenser insulates power  
system from violent arc furnace load swings**

RECENTLY INSTALLED in a southern steel plant, this 25,000-kva synchronous condenser was designed to solve a serious power supply problem. In adding a large arc furnace, the plant engineers had to keep the voltage disturbances from bouncing back into the local power system.

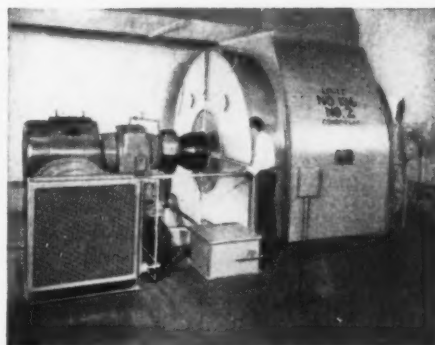
Short of producing their own power, they had a choice of three ways of doing this. They chose a synchronous condenser because it could do the job more economically and more reliably than a motor-generator set and could handle the violent kva fluctuations better than series capacitors.

With the condenser and furnace in parallel, a buffer reactor on the line insures adequate absorption of the arcing transients by the condenser. And pilot excitation from a *Regulex* control provides high speed response to the reactive kva swings of the furnace.

If you need a special condenser or one for power factor correction, Allis-Chalmers can supply a unit engineered to your requirements. For construction features, ratings and standards, ask your A-C representative for Bulletin 05B7285. Or write to Allis-Chalmers, Milwaukee 1, Wisconsin.

A-3853

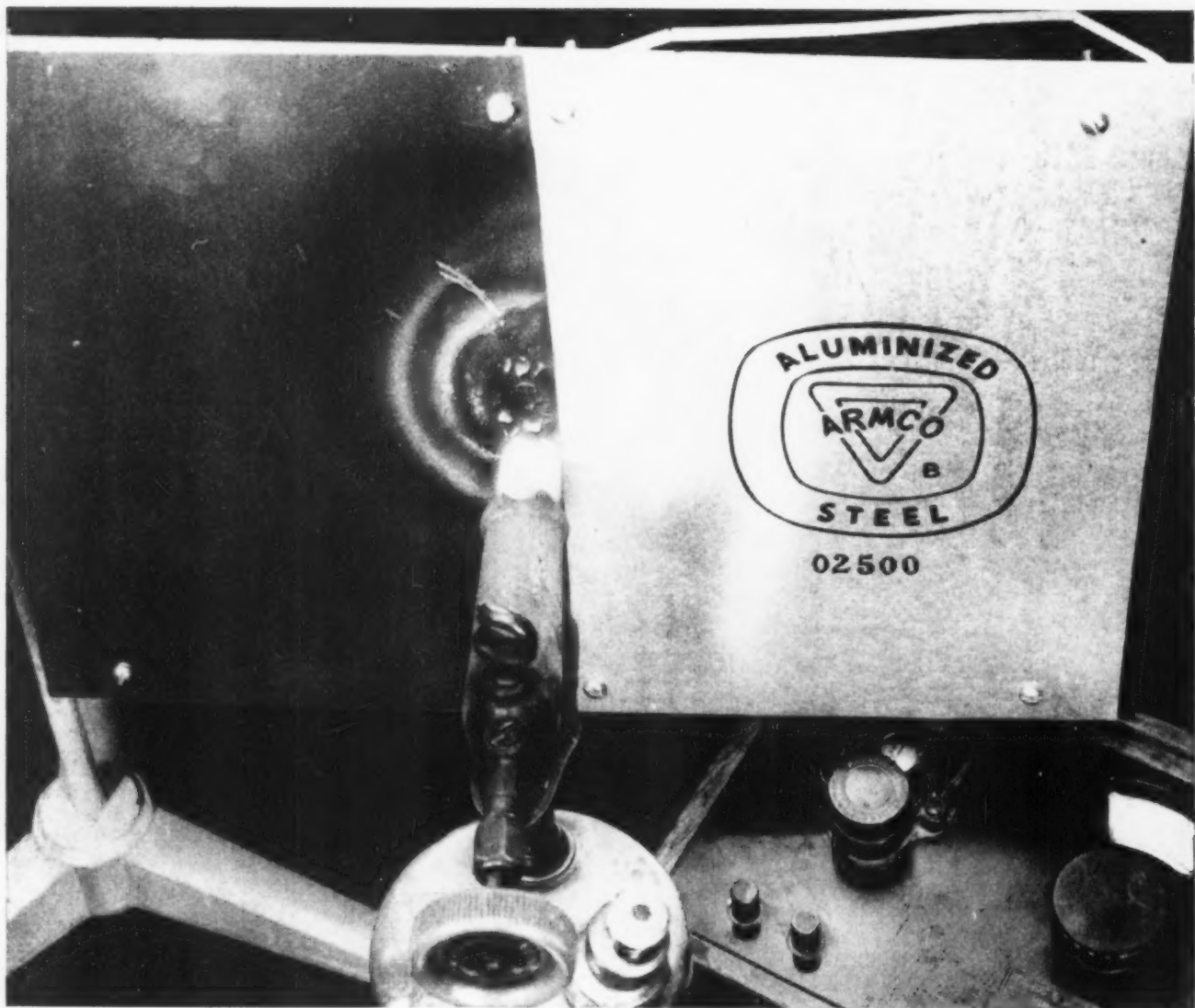
*Regulex* is an Allis-Chalmers trademark.



One of two units installed for power factor correction in a large Ohio steel plant, this 20,000-kva synchronous condenser paid for itself within a short period of time.

# ALLIS-CHALMERS





## Blow-torch heat doesn't "faze" this metal

The unique heat-resisting qualities of Armco ALUMINIZED\* Steel are demonstrated in the test pictured here. Two sample sheets of steel, one Armco ALUMINIZED and the other a standard cold-rolled grade, were mounted side by side and subjected to *blow-torch heat*.

The ordinary steel soon scaled and pitted, but the ALUMINIZED Steel was not damaged at the end of the test.

Not only does ALUMINIZED resist damage from heat —

\* U. S. PAT. OFF.

it also reflects heat up to 900 F. About 80% of the radiant heat sent against its surface *bounces back*.

If your products are exposed to a combination of heat and corrosion, you can give them extra sales advantages by using Armco ALUMINIZED Steel. The "give and take" qualities of this special hot-dip aluminum coated steel make it ideal for many applications.

Write us for complete data on ALUMINIZED Steel.

### ARMCO STEEL CORPORATION

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## Editorial

The Iron Age

FOUNDED 1853

## The Last Frontier

THE ability of Americans to produce for the greatest number at the lowest possible price explains our high standard of living. What was once the privilege of a few is now the right of many. Homes, appliances, cars and hundreds of labor saving (or pleasure producing) products are within reach of millions.

Accompanying this improvement in man's lot has been a dangerous growth in taxes with an increasing percentage of manufacturing dollars going to employment costs. These items have been held partly in check by cost saving equipment, tools and techniques. It seems as if the tax and labor bill is outdistancing the trend in cost cutting.

If labor costs and taxes become ridiculously high—and they are headed that way—our much vaunted mass production will fall on its face. Lower taxes, more incentive for capital, less acceleration in wage rates and a better break for free markets can give Americans a new horizon for mass production and consumption. But something even more important is necessary.

Behind the mass producing industries are machine tools, the key-stone of our way of selling more at relatively lower prices. Equally important is the tool engineer who blueprints dies, jigs, fixtures and other links in the cost-cutting chain.

Behind him is the last frontier—the tool and diemakers. Today we are seriously short of them; we will be more so in the future. These men make the “master” tool, gage or die. With the “master” as a guide the manufacturer competes and stays in business.

Many large firms have their own tool and die shops. Others farm out their work to contract tool and die shops manned by less than 45,000 highly skilled, creative and individualistic workers. Many owners of these small businesses graduated from tool rooms of large machine tool and manufacturing companies.

We must have more candidates willing to work in tool and die shops and learn the hard way. Small contract shops must have opportunity to give free play to their skill and imagination else the heart will go out of our mass production inheritance.

If that happens we will have a frozen push button economy, standardization of everything and monotony for all—a mechanical thing without spirit, imagination or incentive.

Tom Campbell

Editor

In 1926 Heyl & Patterson built its first ore bridge for Weirton Steel Company. This bridge, now 26 years old, is still efficiently unloading, stocking and reclaiming ore for the Weirton blast furnaces.

# 1



In 1942 the second H & P ore bridge for Weirton Steel was put into operation. This bridge is essentially of the same dimensions and runs on the same tracks as the original bridge. It also includes extra sturdiness, more safety features, greater ease of control and provisions for lower maintenance.

# 2



# 3

In 1952 the third ore bridge was designed, fabricated and erected by Heyl & Patterson for Weirton Steel. Because of the efficient and successful performance of the first two H & P bridges through the years, this latest bridge is, by request, almost an exact duplicate of the bridge built in 1942.

The performance record of the three Ore Bridges at Weirton Steel Company, designed, fabricated and erected by Heyl and Patterson, illustrates the sturdiness, dependability and efficiency built into every piece of Heyl & Patterson Heavy Bulk Materials Handling Equipment. Heyl & Patterson has the experience, facilities and personnel to do THE WHOLE JOB . . . ALL THE WAY FROM DESIGN to ERECTION.

**ORE BRIDGES**  
*at*  
**WEIRTON**  
**STEEL COMPANY**

**Heyl + Patterson, Inc.**  
"SINCE 1887"

55 WATER STREET • PITTSBURGH 22, PA.

**Heavy Bulk Materials  
Handling Equipment**  
**All The Way from  
Design to Erection**

# Dear Editor:

## Letters from readers

### Out With Controls

Sir:

The writer read your editorial "Out With Controls" in the Oct. 16 issue with a great deal of approval. He certainly concurs with you.

If possible, we would like a dozen copies of this editorial for distribution.

F. M. WHIPPLE  
President

Springfield Metallic Casket Co., Inc.  
Springfield, Ohio

Sir:

May I compliment you on your editorials and especially the one entitled "Out With Controls," in the Oct. 16 issue.

To me this kind of manipulation is just another tool of socialism and I hope our representatives in Washington will soon throw them out. Your statements are corroborated by our unpleasant experiences.

J. H. MURRIAN

W. J. Savage Co.  
Knoxville, Tenn.

### Productivity

Sir:

On p. 39 of your Oct. 2 issue a report by Fisher, Rudge & Neblett, management consultants, was mentioned in the article "Productivity—Joker in Wage Deck."

Do you know if this report is available for interested persons and where I might secure one?

T. H. MECKE, JR.  
Manager, Special Services

Ford Motor Co.  
Dearborn

The report is available from Fisher, Rudge & Neblett, 250 Park Ave., New York, N. Y.—Ed.

### Clarification

Sir:

I would like to call your attention to some errors, probably made by your proofreaders, which appeared in my article "How Ferromagnetism Works" in your Sept. 11 issue.

In the paragraph on magnetization of iron, the text should read, "Increasing the strength of the applied field causes irreversible domain boundary motions. At this same time, domain fields which are parallel to the applied field but oppositely directed turn completely around."

In both text and formulas, references to the linear density of an imag-

inary surface current sheet should be represented by the symbol  $j_s$  (sub s) not the product  $j_s$ . In the discussion of Faraday's Law, formulas

should read  $E = -K \frac{d\phi}{dt}$  and later,

$E = -L \frac{di}{dt}$ . The formula for linear density is represented by  $i(N/L)$ .

R. H. ESLING

Research Laboratories  
Bendix Aviation Corp.  
Detroit

We hope your corrections will clarify this subject for our readers.—Ed.

### Binding Device

Sir:

On p. 123 of your Aug. 28 issue you have an item regarding a reinforcing rod clamp developed by a Cincinnati engineer.

This product is of interest to us and we would like to know the name and address of this Cincinnati engineer or of the manufacturer.

G. OTTERBLAD

Plat & Järnverksprodukter Aktieföretag  
Stockholm, Sweden

The engineer is J. P. Costello, 3527 Bevis Ave., Cincinnati 7, Ohio.—Ed.

### Steel's Future

Sir:

Can you supply us with 150 reprints of the article "Steel: What Will the Industry's Future Be?" appearing on p. 193 of the Oct. 9 issue. These are for distribution within our own sales organization.

If these are not available may we have your approval to reproduce them.

H. V. MERCER

Manager, Advertising Dept.

Armco Steel Corp.  
Middletown, Ohio

You have our approval to reproduce the article.—Ed.

### Titanium

Sir:

Mr. Brown's article on titanium (Oct. 9 issue) is most interesting. Perhaps you would be kind enough to send us three copies of Part II when it is available.

M. G. MASTIN  
Engineer in Charge  
Titanium Production Section

U. S. Dept. of the Interior  
Bureau of Mines  
Boulder City, Nev.

PRECISION MADE  
**PHEOLL** SCREWS  
BOLTS, NUTS and  
Special Fasteners...

save assembly time,  
improve product strength  
and final  
appearance



### ACCURATE THREADING SAVES TIME

Pheoll Screws, Bolts, and Nuts are easier to start, easier to drive and easier to tighten—because they're accurately machined and threaded. These features cut your assembly time and cost.

### COLD ROLLED THREADING INCREASES STRENGTH

The grain structure and flow of metal obtained through cold heading and roll threading increases the structural strength of Pheoll Fasteners. Cold working improves thread bearing surfaces, providing greater area of contact for firmer grip. Greater strength reduces possibility of shearing, and time lost in subsequent removal and re-tapping.

### OUR INSPECTION IMPROVES YOUR PRODUCT APPEARANCE

Step by step Pheoll inspection, through every process of production, assures uniform head size and shape; cleanly milled and recessed heads, neat chamfering and countersinking. All these factors contribute to the quality and finish which add materially to your product's final appearance. Write for Pheoll's product literature and price list.

THESE PHEOLL PRODUCTS INCREASE YOUR PRODUCTION RATE. Thumb Screws • Machine Screws • Wood Screws • Sheet Metal Screws • Stove Bolts • Rolled Threaded Wires and Studs • Special Rivets and Pins • Brass Washers

†Furnished in slotted and Phillips Recessed Head Types

**PHEOLL**

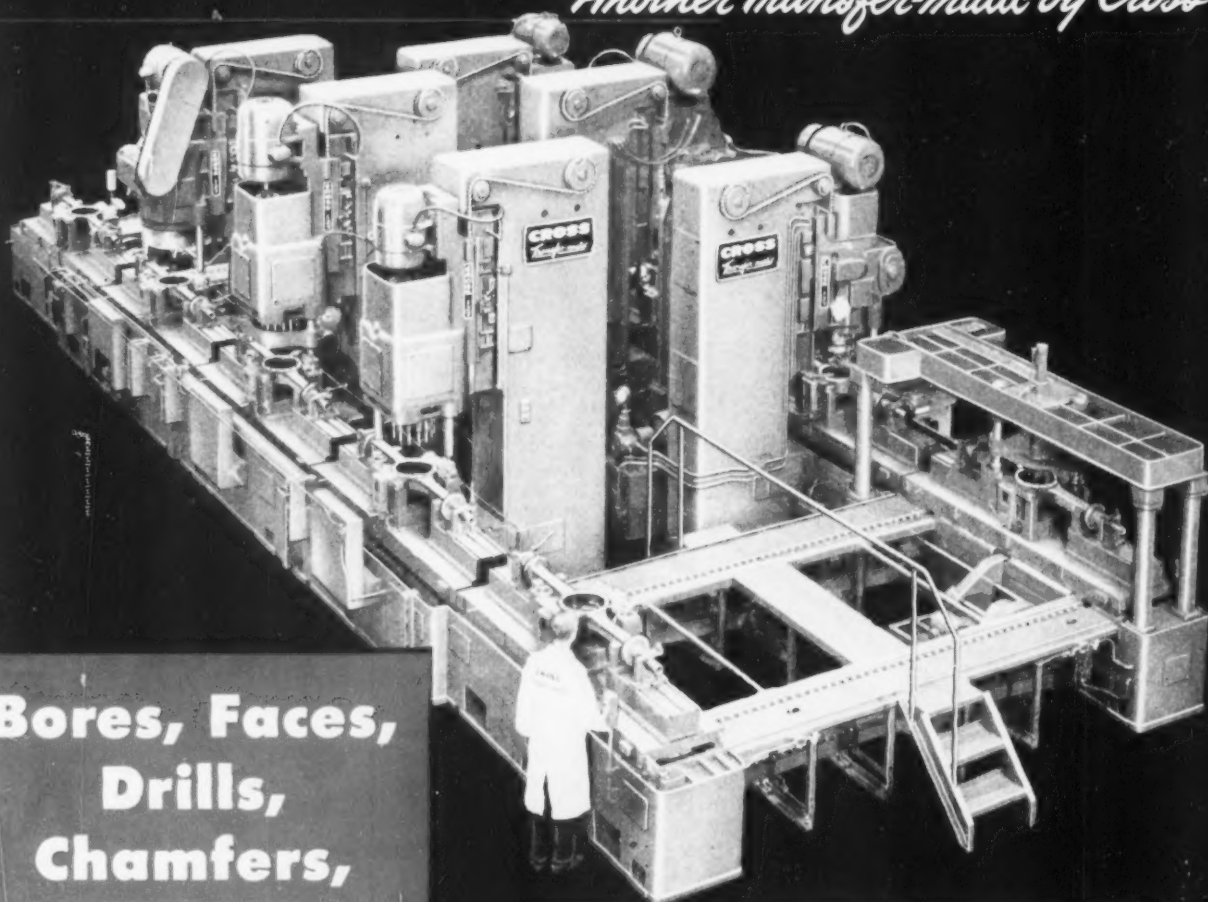


SCREWS  
BOLTS  
NUTS

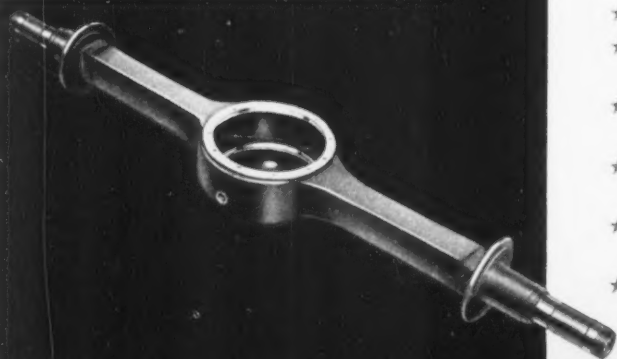
MANUFACTURING COMPANY  
2118 Broadway Road, Chicago 14, Ill.



*Another Transfer-matic by Cross*



**Bores, Faces,  
Drills,  
Chamfers,  
and Taps  
Axle Housings**



- ★ Rough and finish bores banjo hole; rough and finish faces banjo face; drills and chamfers holes in banjo face; drills, spot-faces and taps drain hole.
- ★ 35 pieces per hour at 100% efficiency.
- ★ Capacity for housings from two and one-half to five tons.
- ★ Eight stations—one for loading, one for targeting, six for machining.
- ★ Palletized work holding fixtures hold part securely during all operations.
- ★ Phonograph record finish for the banjo face.
- ★ J.I.C. standard electrical and hydraulic construction with stranded wires.

*Established 1898*

THE **CROSS** CO.  
DETROIT 7, MICHIGAN  
*Special* MACHINE TOOLS

# Fatigue Cracks

by William M. Coffey

## Catastrophe Strikes

Bad news. Glance aloft and you'll see that Charlie Post's big shoes are now trying to be filled by some other guy. Charlie, long time editor of this column, is taking his wonderful sense of humor to the advertising department of your f.f.j.—and Fatigue Cracks is going to suffer. Frankly, this isn't our cup of tea.

The last time we had journalistic ambitions, we were scarred for life. Trying out for our college newspaper, we thought we'd make a big hit, so interviewed a charmin' gal by the name of Ann Corio. You may remember her as the Queen of Burlesque. We do. Wrote a nice little story about her . . . about how she knits and gives tea parties (great drink, tea) and started as a Sunday school teacher—the usual thing. A picture of Miss Corio went with the story—one of those old-fashioned kind that you don't leave lying around for the family to see. Somehow it slipped through the night editor and the next day there was Ann splashed all over the front page practically in her birthday suit. Of course, the paper sold out. But we were given the boot, the Dean gave us a nice working over and Dad sent us a three page letter (typewritten, single spaced) on the ethics of the press. You can understand why we since have steered clear. So it is under great duress that we now reach into Charlie's file and bring out the jokes and puzzles.

## Enceinte

One of the high points in the evolution of automotive styling, to our mind, was the so-called Silver Anniversary Buick with its bulging lines. The public of circa 1928 promptly dubbed it the "pregnant Buick," but it was a top seller.

The memory of its success, and its connotations, may have lingered in the subconscious of a publicity writer for the 1953 Dodge. Describing a new easily operated pull-type door handle, he wrote, "This device should be a boon to women carrying packages or children."

## Reference Library

Executives of nearly all the leading industrial firms have come to depend on the company librarian for all sorts of vital reference ma-

terial, from a technical dissertation in Russian to extra copies of the cartoons in your f.f.j. And the plant libraries these days are likely to contain every type of information pertinent to the business, gathered from all over the world.

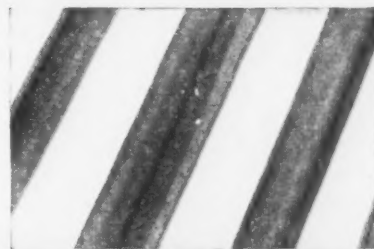
But Leola Michaels, librarian for the Carbony Dept. of G. E. was momentarily taken-aback the other day when the voice over the phone asked, "May I have a picture of a rose for my ceramics class." Then, after a pause, "It's a plant, you know."

## Puzzles

The gambler who tossed his money around in last week's puzzler lost. After an even number of tosses, he had  $(\frac{3}{4})^n$  times the original amount, with "n" being the number of tosses divided by two.

The numbers puzzle posed no problem to Thomas B. Hudson, Jr., Albert Curry & Co.; William E. McCord, Baltimore; William F. Braasch, The Lakeshore Machine Co.; H. Kelsea Moore, Eaton & Howard; Lewis D. Rice, The Timken Roller Bearing Co.; Norb Dornbach, Allis-Chalmers Mfg. Co.; and George Pascoe, Ford Motor Co. John R. Hudson, International Harvester Co., broke loose with correct answer to the conical tanks and circular farm problem, and George T. Nuss, Jr., Shell Oil Co., solved the conical tanks, money and chicken puzzles.

Do you remember this one, tossed out by Mr. Nuss? Five castaways gathered all of the coconuts on their island into a single great pile and then went to sleep after agreeing to divide them all equally the next morning. Shortly after nightfall one man, doubting the honesty of his companions divided the hoard into five equal piles. One coconut was left over and this he threw into the ocean. He then hid his own share and reshuffled the remainder. During the night each man had the same mistrustful idea and went through the same procedure. Each found one indivisible coconut which he tossed into the ocean. In the morning came the legal distribution. This time there was no extra coconut to throw away. How many coconuts remained for this morning distribution. The smallest answer is needed.



**Unsurpassed**  
*Synthetic*  
**RUBBER**  
**COMPONENT**  
**PARTS**



Users of Acadia Synthetic Rubber component parts in hundreds of industries have found them unsurpassed. No matter what function synthetic rubber must perform, depend on Acadia parts. They best meet exacting specifications and operating conditions such as moisture, oil, heat, wear and age resistance. Molded, extruded, die-cut to close limits—compounded to meet specific conditions. Acadia engineers will gladly cooperate.

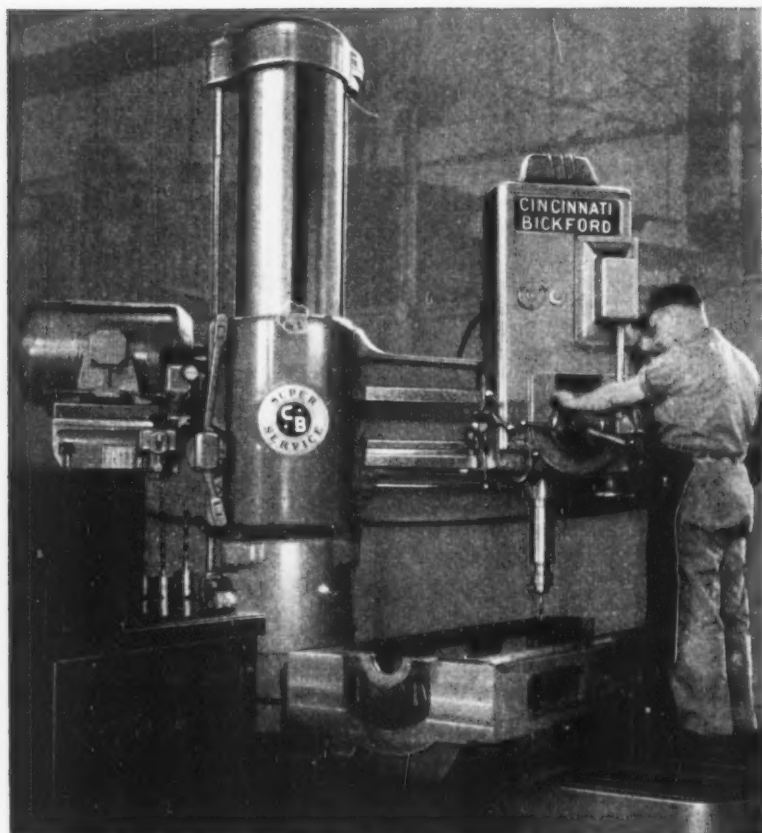
Seals • Gaskets • Washers • Cups • Channel • Strip  
"O" Rings • Sheet • Tubing • Roll Goods • Cut Parts  
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Sheet and Roll Felt Manufactured for Special Purposes  
and To Meet All S.A.E. and Military Specifications.

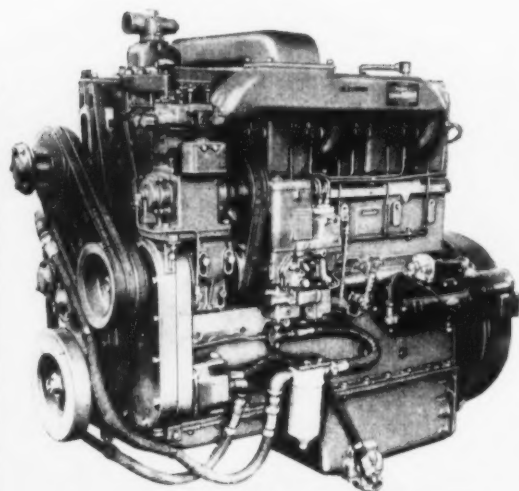
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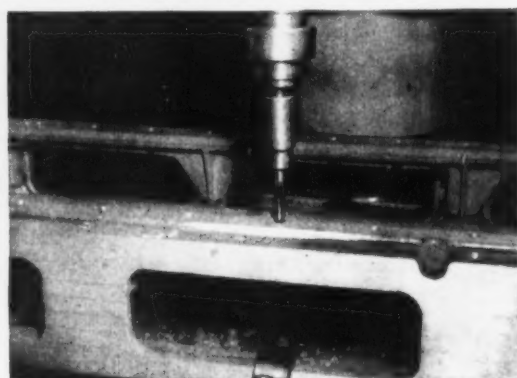
# IT'S *super service* FOR THIS DIESEL...



Drilling oil pans for Cummins diesels—used in switching locomotives, power shovels and oil well drilling equipment and generator sets.



A 300 HP Model NHRS-600 Cummins diesel.



Photos courtesy of the Cummins Engine Co., Inc., Columbus, Ind.

Drilling operations on a Cummins diesel engine are shown here. The Cummins Engine Company indicates this Bickford Radial really meets their varied needs.

Many features contribute to the outstanding performance of Cincinnati Bickford Super Service Radial Drills.

The great range of speeds and feeds (36 speeds, 18 feeds) and step-saving controls

centralized in the Super Service clear view head step up production.

Bickford hydraulic column clamps are standard, and the heavy arm, column, column trunk and base give great strength and rigidity.

Long life, low maintenance and accurate performance are all recognized features of Cincinnati Bickford Super Service Radial Drills.

Write for Bulletin R-29, on the 11" to 19" diameter column, and Bulletin R-22 on the 22" to 26" diameter column.

.... **CINCINNATI  
BICKFORD**



RADIAL AND UPRIGHT DRILLING MACHINES

.....  
**THE CINCINNATI BICKFORD TOOL CO.**

Cincinnati 9, Ohio, U.S.A.



## Conventions & Meetings

Oct. 27-30—American Gas Assn., annual convention, Atlantic City, Hotel Traymore, N. J. Assn. headquarters are at 420 Lexington Ave., New York.

Oct. 27-31—Electrochemical Society, semi-annual national meeting, Mt. Royal Hotel, Montreal, Canada. Society headquarters are at 235 W. 102nd St., New York.

Oct. 27-31—Gas Appliance Manufacturers Assn., exhibition, Atlantic City, N. J. Association headquarters are at 60 E. 42nd St., New York.

Oct. 30-31—Society of Automotive Engineers, Inc., National Diesel Engine Meeting, Chase Hotel, St. Louis. Society headquarters are at 29 W. 39th St., New York.

Oct. 30-31—National Assn. of Aluminum Distributors, annual convention, Del Monte Lodge, Pebble Beach, Calif.

Oct. 30-31—Society for Advancement of Management, annual fall conference, Hotel Statler, New York. Headquarters are at 411 Fifth Ave., New York.

Nov. 5-9—Scientific Apparatus Makers Assn., mid-year meeting, The Homestead, Hot Springs, Va. Association headquarters are at 20 N. Wacker Drive, Chicago.

Nov. 6-7—Society of Automotive Engineers, Inc., National Fuels & Lubricants Meeting, The Mayo, Tulsa, Oklahoma. Society headquarters are at 29 W. 39th St., New York.

Nov. 6-10—Magnesium Assn., annual meeting, Hotel Biltmore, New York. Association headquarters are at 122 E. 42nd St., New York.

Nov. 10-13—National Electrical Manufacturers Assn., semi-annual meeting, Hadson Hall Hotel, Atlantic City, N. J. Association headquarters are at 155 E. 44th St., New York.

Nov. 10-14—Wire Assn., annual convention, Cleveland. Association headquarters are at 300 Main St., Stamford, Conn.

Nov. 13-14—National Constructors Assn., Labor Committee and Executive Committee, Hotel Roosevelt, New Orleans. Association headquarters are at 50 E. 41st St., New York.

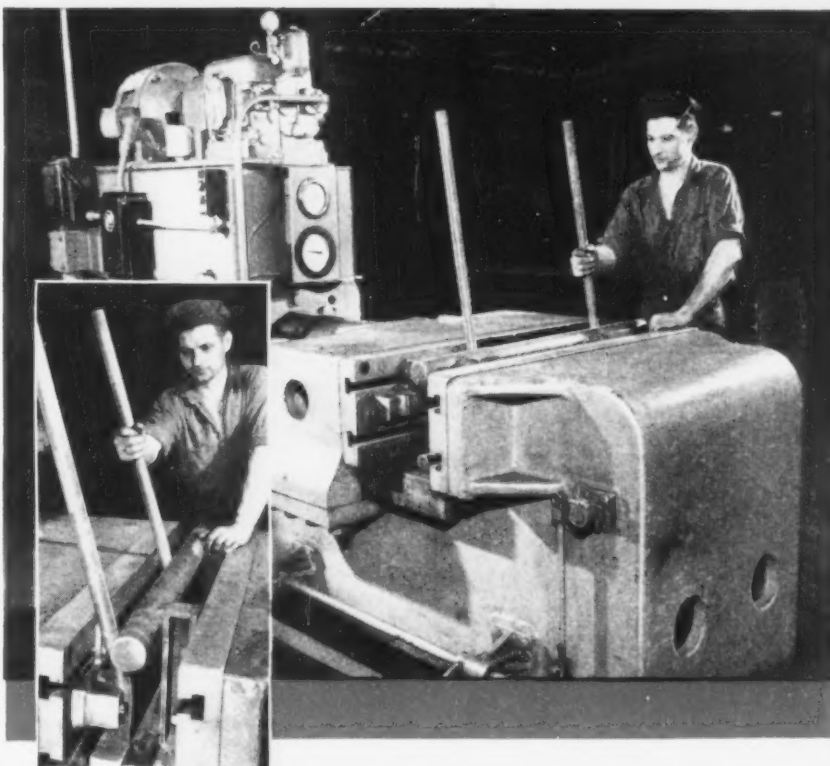
Nov. 19—American Mining Congress, Coal Division Conference, Pittsburgh. Society headquarters are at 1200 18th St., Washington.

Nov. 19-21—American Management Assn., Finance Conference, Hotel Roosevelt, New York. Association headquarters are at 330 W. 42nd St., New York.

Nov. 20-21—American Society for Quality Control, mid-West Conference, Claypool Hotel, Indianapolis.

Nov. 21—Malleable Founders Society, Western Section meeting, The Drake, Chicago. Society headquarters are at Union Commerce Bldg., Cleveland.

Nov. 28-30—Grinding Wheel Institute, annual meeting, Hotel Statler, Buffalo. Association headquarters, P. O. Box 64, Greendale, Mass.



Mercury Mfg. Co. does a better job  
twice as fast with a

# FARQUHAR Hydraulic Press

Mercury Manufacturing Co., Chicago, Ill., producers of fork trucks, tractors and trailers, uses a 200-Ton Farquhar Horizontal Bulldozer press to make forgings and stampings and to form plates. In operation 8 hours a day, the press does most jobs twice as fast as the mechanical bulldozer used formerly, and better speed control produces better work.

In addition, many pieces of work that used to be farmed out are now done at Mercury—providing better production and quality control, and effecting additional savings of time.

In the operation shown above, high carbon brazed steel is bent quickly and accurately. In other operations, the press forms heads on bolts, legs for caster forms, and bends structural T frames.

Mercury reports very small maintenance costs, and sums up the company's satisfaction with, "It's the best!"

### Farquhar Presses Cut Your Costs

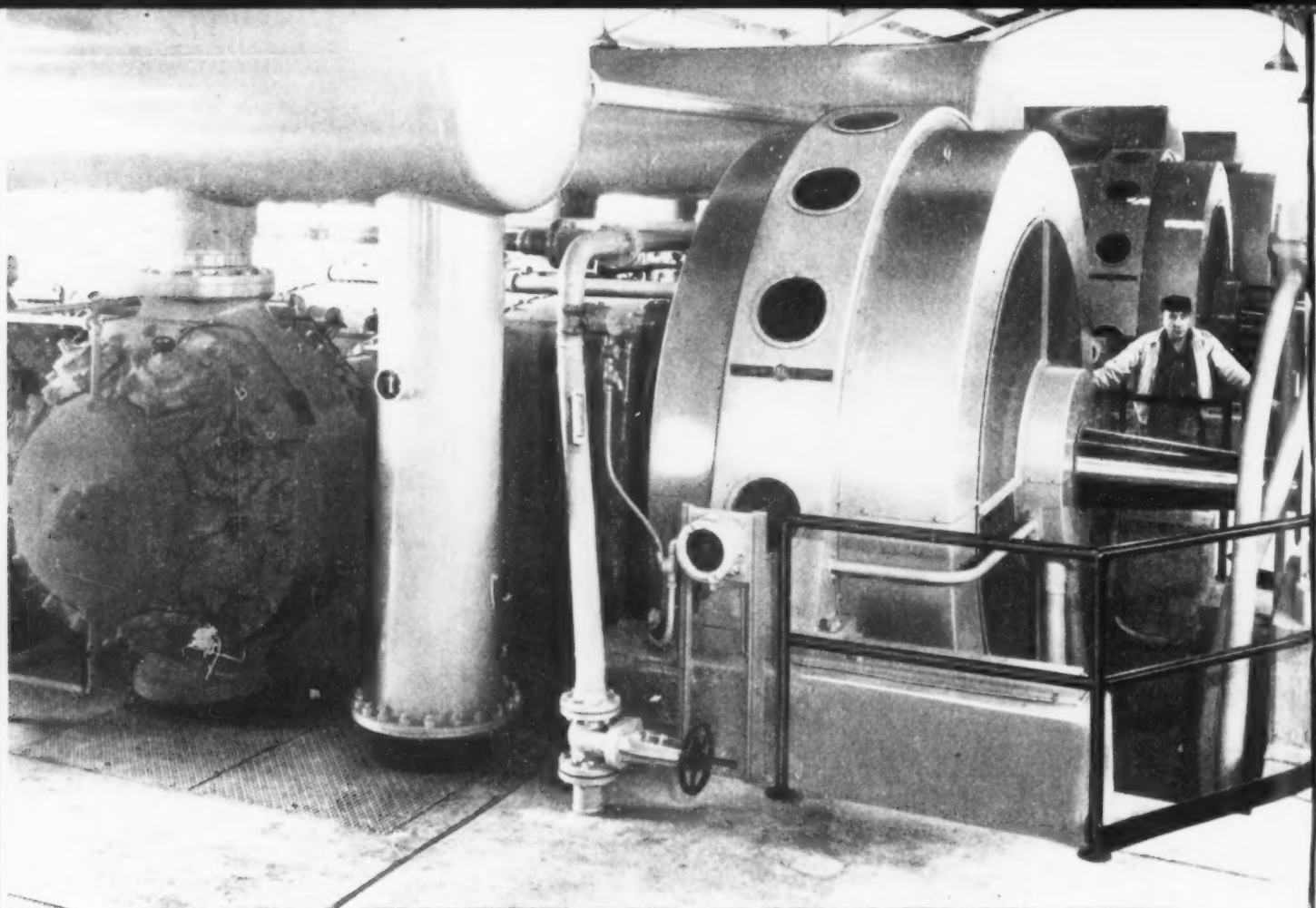
Just one more example of cost-cutting Farquhar performance in heavy production! Farquhar Presses are built for the job... assure faster production due to rapid advance and return of the ram... greater accuracy because of the extra guides on moving platen... easy, smooth operation with finger-tip controls... longer life due to positive control of speed and pressure on the die... long, dependable service with minimum maintenance cost!

Farquhar engineers are ready to help solve whatever production problem you may have. Give them a call.

Send for Free Catalog showing Farquhar Hydraulic Presses in all sizes and capacities for all types of industry. Write to: A. B. FARQUHAR CO., *Hydraulic Press Dept.*, 1503 Duke St., York, Pa.

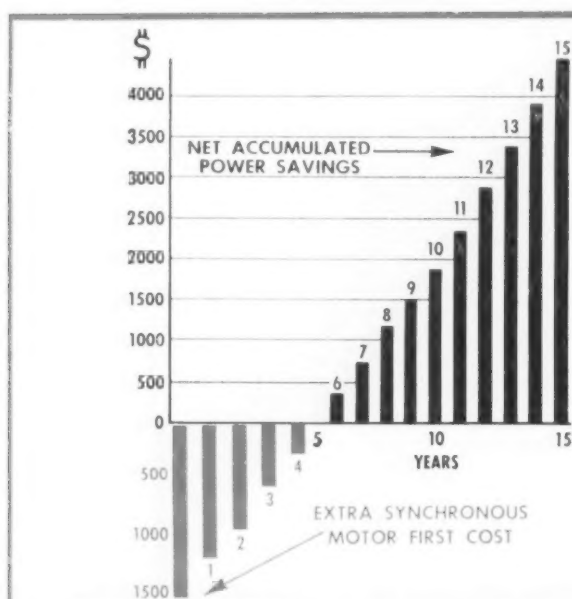


—A. B. FARQUHAR COMPANY Division of THE OLIVER CORPORATION—



COMPRESSORS IN A GAS STORAGE STATION are driven by General Electric 3000 hp, 300 rpm synchronous motors.

# Can synchronous motors cut y

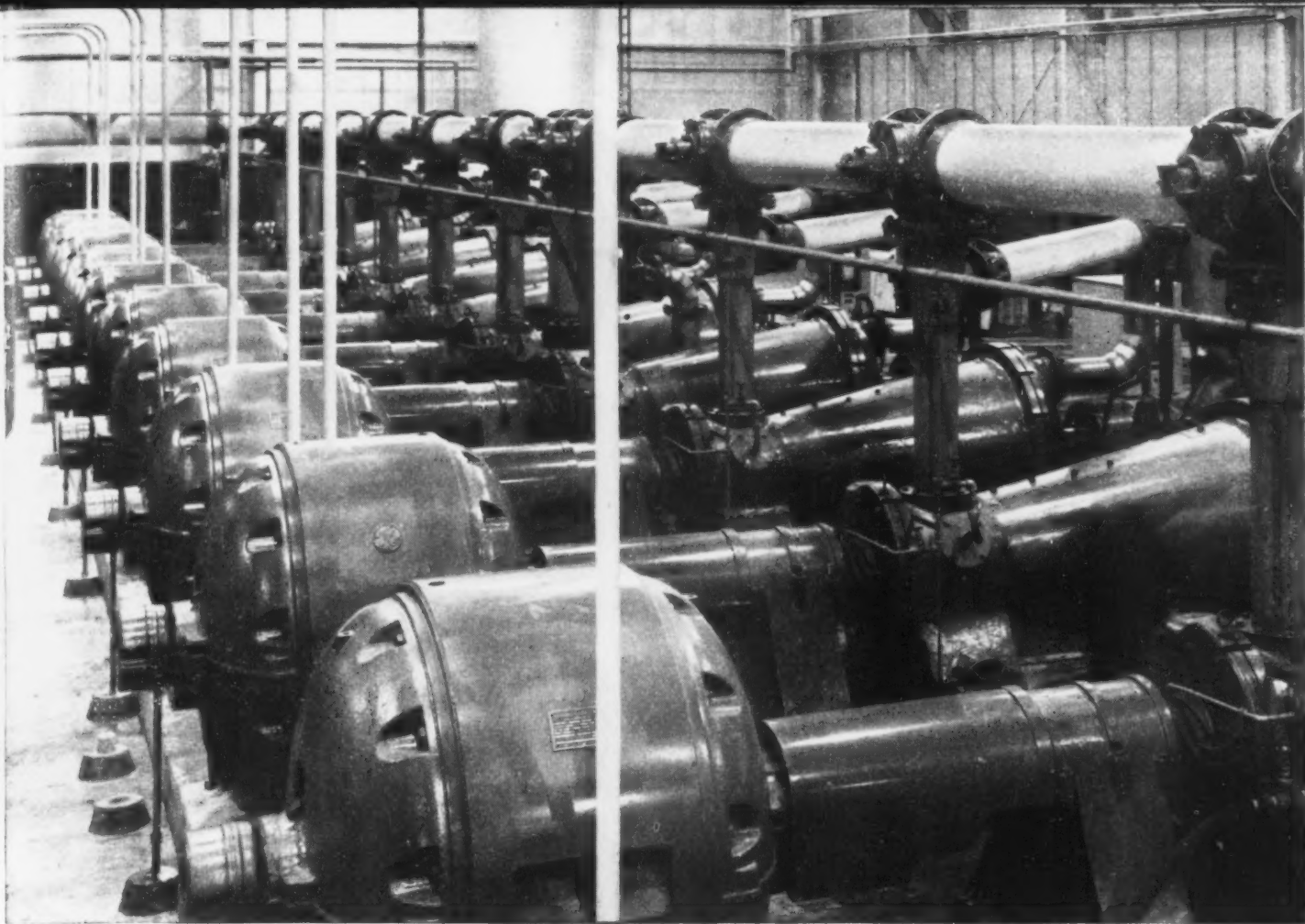


OPERATING SAVINGS on the synchronous motor application described above are shown over a period of twenty years. Extra first cost will be amortized in five years; savings will continue for many more.

## Here's how one plant saves with a G-E Synchronous Motor

The specifications for a new pump motor were 250 hp, 600 rpm, 2300 volts, 3 phase, 60 cycle. The price of a 1.0 Power Factor synchronous motor, including exciter and control, was higher than an equivalent squirrel-cage induction motor with control. However, the synchronous motor efficiency, including exciter loss, was 1.6% higher than the induction motor (93.0% vs 91.4%). Since the motor was to operate continuously at a power cost of 11 mills per kilowatt-hour, it was found that the power savings would repay the additional investment in only five years. The operating savings will continue throughout the life of the motor—10, 20, even 30 years.

Savings such as these make synchronous motors the most economical drive for many heavy-duty, continuous-service applications. And in many cases, synchronous motors are lowest in first cost, too.



GENERAL ELECTRIC 400 HP SYNCHRONOUS MOTORS are coupled to ten Jordans in a paper mill.

# ot your plant's operating costs?

## Greater Efficiency on Large, Constant-Speed Applications Can Lower Power Costs Substantially

On certain applications selection of General Electric synchronous motors can bring about substantial savings in plant operating costs. Synchronous motors usually have a higher full-load efficiency than any other type of motor, produce more work per dollar's worth of power consumed.

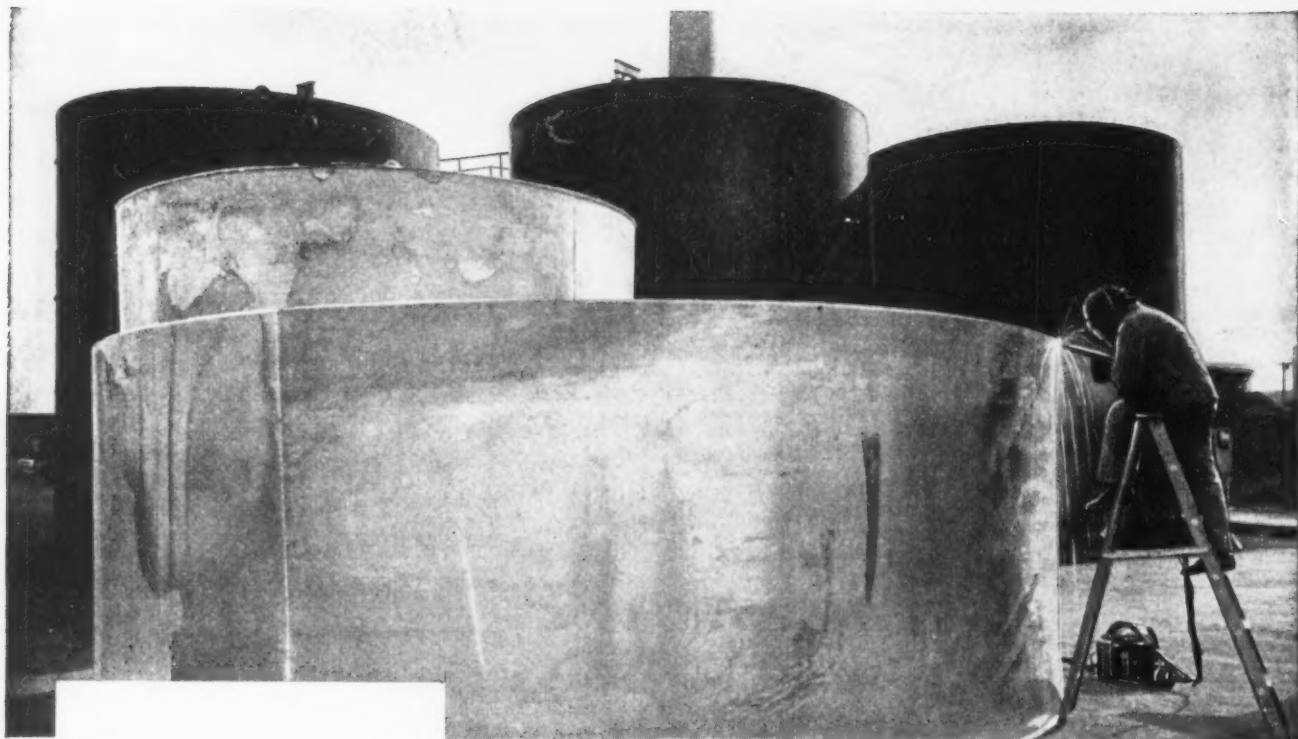
Furthermore, synchronous motors may be able to improve plant power factor—the ratio of total kilowatt load to total kva load. When these two fall out of balance, high system losses, high power bills, or increased maintenance costs commonly result. Using a *unity power factor* synchronous motor adds only to total kw load. And, a *leading power factor* synchronous motor will actually supply reactive kva's to your

system, while operating at its normal rated output.

Before you select a drive for a large piece of equipment providing heavy and continuous service, be sure to investigate the economics of General Electric synchronous motors. Call in your G-E representative—he'll be glad to discuss your situation with you. Also, information on G-E synchronous motors and their application is available in the following bulletins: GEA-5332, "Low-Speed Synchronous Motors;" GEA-5426, "High-Speed Synchronous Motors;" GEA-5817, "Plant Power Factor Improved With G-E Synchronous Motors." Write to Section 770-27, General Electric Company, Schenectady 5, N. Y.

GENERAL  ELECTRIC





One welder. One helper. The Aircomatic Welding Process . . . and Universal Copper Works, Inc. Newark, N. J. fabricates a 50,000 gallon aluminum industrial acid tank for A. Gross & Company at a savings of 75% in filler rod and 50% in time over previous methods used.

# AIRCOMATIC® WELDING

*cuts costs of*

## "HUNGRY ACID" TANKS

Experts long knew aluminum was the answer for 'hungry acid' storage tanks . . . acetic, fatty acids, for example. Only a few years ago fabrication of these ideal tanks was a sizable problem.

Today that's all changed. Air Reduction's Aircomatic Welding Process has so simplified tank-building operations, that in-the-field construction has become routine practice.

Based on continuous feeding of bare filler wire in conjunction with inert shielding gases, the Aircomatic Process now presents the welder with these fabrication advantages:

- 1 Continuous, high-rate deposition of filler metal
  - 2 Semi-automatic, all-position welding
  - 3 Minimum plate-edge preparation
  - 4 Heavy section welding with little or no preheat
  - 5 No flux — elimination of slag removal
  - 6 Visible arc — no blind welding
- Find out how you can use Aircomatic welding. Write or phone your nearest Airco office. Ask for your copy of Catalog 17 "The Aircomatic Process". Also, inquire about Airco's film "The Tool for the Job" — the story of Aircomatic in full color.

AT THE FRONTIERS OF PROGRESS YOU'LL FIND



DEALERS  
AND OFFICES IN  
MANY PRINCIPAL CITIES

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There's gold for you  
in "them thar" **Coils!**



## **SuVeneer<sup>®</sup>** CLAD METALS

Prospecting for more profitable product fabrication? You're in luck when you find how **SuVeneer** Clad Metals pan-out on your applications . . . in savings of expensive non-ferrous materials, in ease of fabrication, and in improved product performance. **SuVeneer** Clad Metals are composites of genuine copper, or brass, or nickel, bonded inseparably to plain strip steel on one or both sides. • You save from 70% to 80% of the solid strategic metals, while enjoying *all* their surface advantages. Write!

**Superior Steel**

CORPORATION

CARNEGIE, PENNSYLVANIA

# No cam worries with a Warner & Swasey 5-Spindle Automatic

NO CAMS TO DESIGN



NO CAMS TO MACHINE



NO CAMS TO STORE



NO CAMS TO FIND

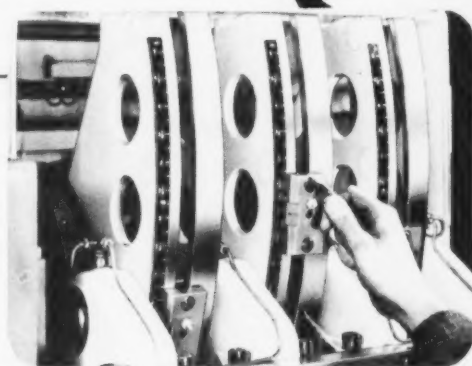


NO CAMS TO CHANGE



IT'S SIMPLE TO SET UP

JUST make a simple setting and there you have your new feed stroke, clearly indicated on a graduated scale. Yes, it's as easy as that! All feed strokes are quickly available for both longitudinal and cross slides. No more need to sacrifice cycle time because the "right" cam is not on hand or because a cam change would take too long. You always get your exact feed stroke quickly on the Warner & Swasey 5-Spindle Automatic.



Patented "Quick-Set" Quadrants cut set-up time, quickly adjust to any feed stroke between 0 and 5 inches.

**WARNER  
&  
SWASEY**  
Cleveland



5-Spindle Bar Machines  
- 1 1/4" Standard Capacity  
- 2 1/4" Oversize Capacity  
5-Spindle Chucking Machine - 6" Swing

YOU CAN MACHINE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY TURRET LATHES, AUTOMATICS, AND TAPPING MACHINES



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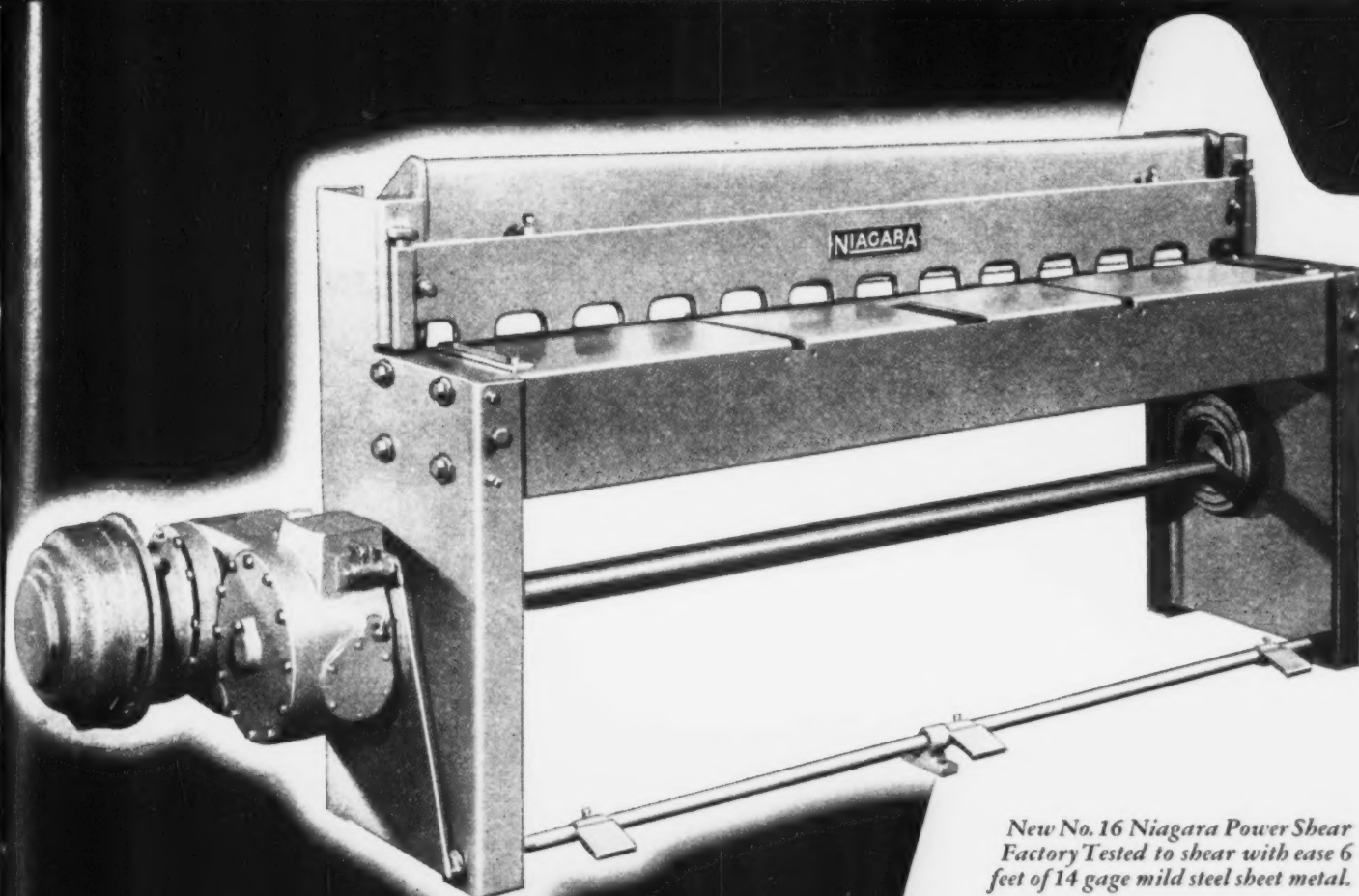
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*New No. 16 Niagara Power Shear  
Factory Tested to shear with ease 6  
feet of 14 gage mild steel sheet metal.*

# NIAGARA

## ANNOUNCES

*New Power Squaring Shears*

*Especially Designed*

*for the Thrifty*

*Sheet Metal Shop*

- Greater production at 85 cuts per minute
- Constructed of unbreakable steel throughout
- Closed box section bed and cross-head for maximum rigidity
- A new leader in styling
- New hi-power totally enclosed drive
- Famous patented Niagara Sleeve Clutch
- All gears and clutch operate in bath of oil
- Four cutting edge knives
- Entire drive and main shaft operate on anti-friction bearings
- Cam actuated detent eliminates brake. Never needs adjustment
- Selective control for continuous or single stroke operation
- Parallel Back Gage, self measuring, ball bearing

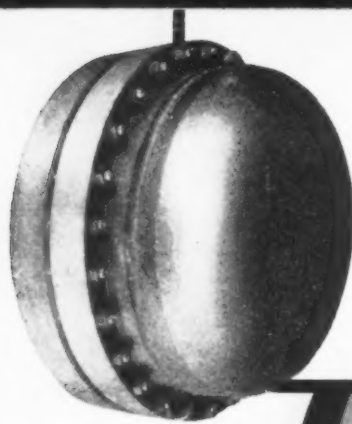
**Write for Bulletin 73**

**NIAGARA MACHINE & TOOL WORKS • BUFFALO 11, N. Y.**

*Manufacturers of Presses, Shears, Machines and Tools for Plate and Sheet Metal Work*

**DISTRICT OFFICES: DETROIT • CLEVELAND • NEW YORK • PHILADELPHIA**



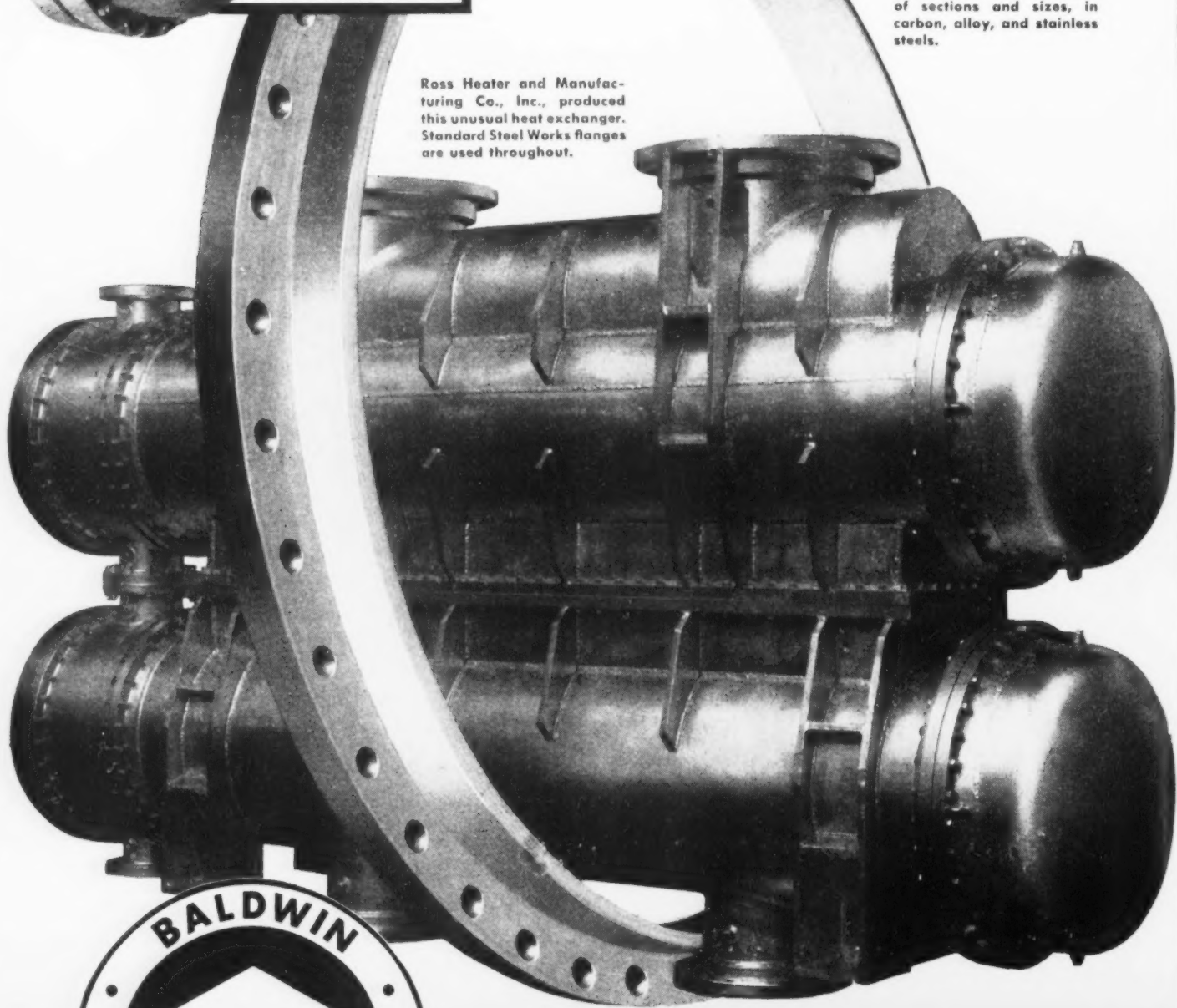


Domed head on this exchanger is easily welded to welding neck-type flange. Slip-type flanges also available.



Standard Steel Works flanges are available in a wide range of sections and sizes, in carbon, alloy, and stainless steels.

Ross Heater and Manufacturing Co., Inc., produced this unusual heat exchanger. Standard Steel Works flanges are used throughout.



# BALDWIN

*Here's a good connection for you!*

# STANDARD STEEL WORKS FLANGES

Those rolled steel flanges you buy for installation on your pressure vessels, on fabricated, flanged piping fittings, and for other uses have a vital bearing on the performance and reliability of the equipment. It's just plain good business to insist on the top-notch quality that will safeguard the reputation of your products!

Providing this high quality is an every-day production aim at Standard Steel Works Division. The flanges start with steel produced in Standard's own open-hearth furnaces—which permits continuous metallurgical control. Forging is done on special machines, by men who have made a career of making fine flanges. Modern

heat treating facilities assure stress-free blanks, and develop all desirable properties inherent in the metal. Adequate machine tools expedite turning.

Advantages extend even further. A simple, convenient form, "Dimension Blank for Rolled Steel Flanges" greatly simplifies the job of obtaining quotations. The form can be filled out in a few moments with all the data needed to obtain a price. We will be glad to send you some copies of this form, if you will write.

Standard is big enough to handle almost any job—small enough to make each job a matter of individual concern. We would like to serve you.

## NOTICE DESIGN AND PURCHASING DEPARTMENTS

Carbon, Alloy or Stainless Steel Rolled Pipe Flanges for all types of service are produced by Standard Steel Works in a range of sizes from 18" I.D. to 144" O.D.

Ask for a supply of our forms, "Dimension Blank for Rolled Steel Flanges." All information required for a quotation can be inserted in a few moments. Your inquiries will receive immediate attention.

### STANDARDIZE ON STANDARD for



GEAR BLANKS



STEEL CASTINGS



FORGINGS



WELDLESS RINGS

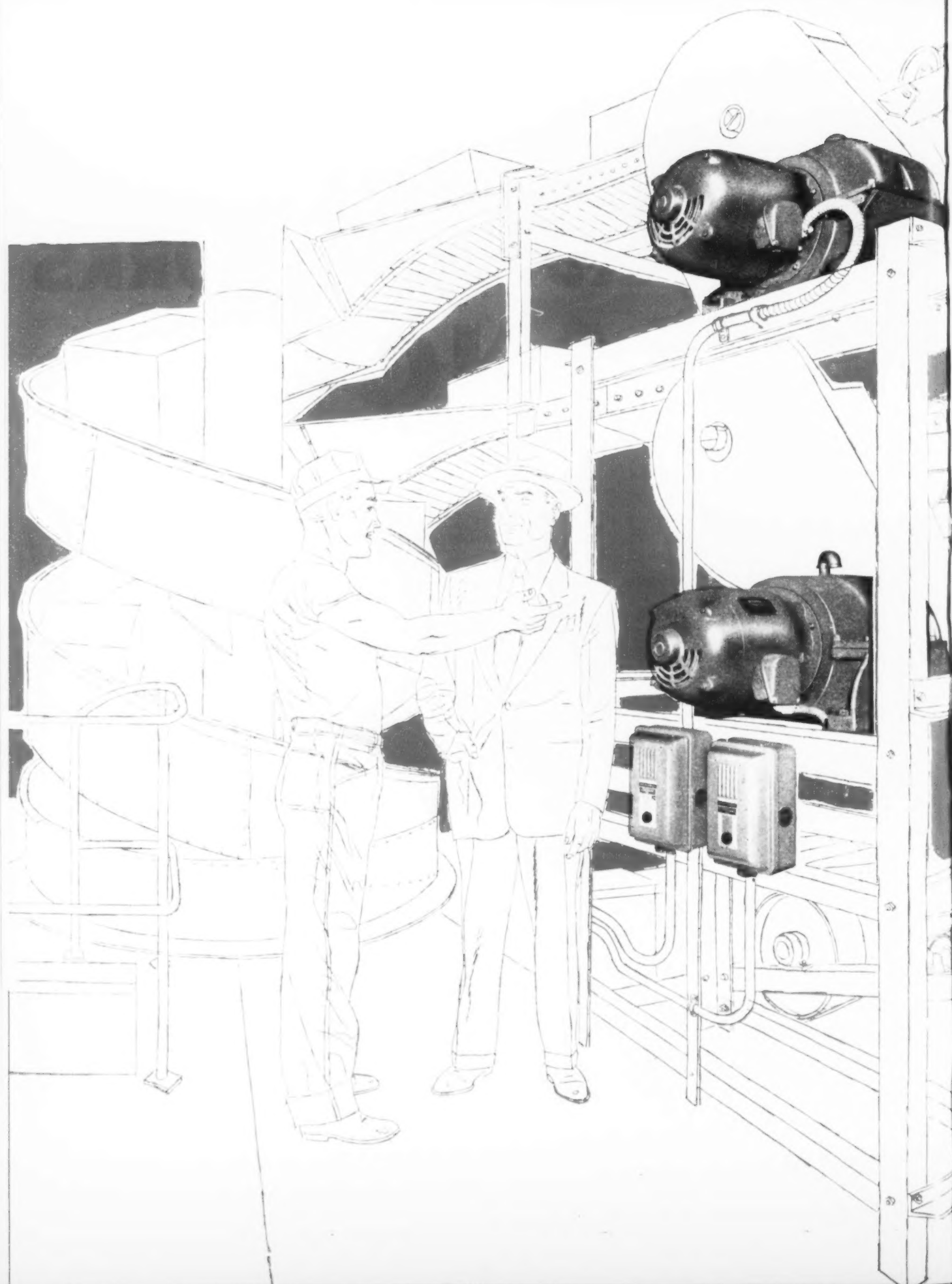


FLANGES

STANDARD STEEL WORKS DIVISION

BURNHAM, MIFFLIN COUNTY, PENNSYLVANIA

# -LIMA-HAMILTON





# "Conveyors keep 'em coming with this drive team cracking the whip"

"Here's a mighty important step in our production flow. A breakdown on this conveyor jams up an entire line . . . spells real trouble! That's why we installed Westinghouse Life-Line Gearmotors and Controls to handle the job. Past experience has shown us that this drive team will give continued, dependable service. We know they'll keep our output flowing smoothly without letup.

"All the gears are specially heat-treated with tapered hardness from surface to core to provide tough, wear-resisting teeth. They are hobbled and shaved after heat-treatment for quiet, smooth operation. All this adds up to precision gearing with maximum load carrying capacity. Supports for the antifriction bearings are mounted directly in the housing, not in end brackets, thereby providing permanent alignment of working parts and maximum overhung load capacity. As for the motors themselves, they're Life-Line too. Have all the

proved Life-Line features, such as factory-sealed bearings, that need no lubrication—ever, and steel construction that's so vital to dependable operation and long service life.

"Notice the Life-Linestarters! They have what it takes to stand up under constant usage. Each contact assembly pivots on a knife-edge of hardened steel. This reduces wear and leaves nothing to stick or jam. Contacts are silver tipped and are protected with the "De-ion" Arc Quenching Chamber which snuffs out those destructive arcs. All in all, these starters make a perfect matched control for the gearmotor. They're rough, tough and dependable. Just what we need on these important control jobs.

"These Westinghouse Gearmotors and Controls really form a drive team we can rely on. They'll do the same for you. Just call your Westinghouse representative for full details, or write: Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania."

J-07305

YOU CAN BE SURE...IF IT'S  
**Westinghouse**

---

*Life-Line* GEARMOTORS  
*Life-Linestarters*





HELPS THE NATION'S STEEL MILLS

*...speed production with*

**PARALLOY**



**STEEL MILL ROLLS**

**PINCH ROLLS**

**COILER ROLLS**

**TENSION ROLLS**

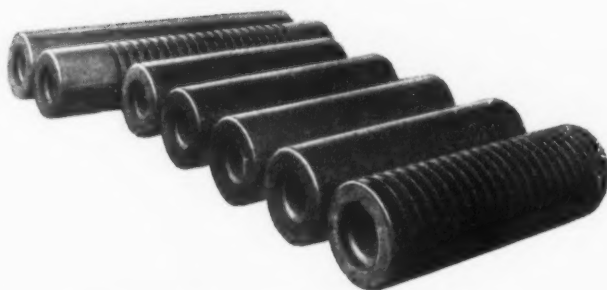
*Other **F&M** Products  
of Proven Performance*

- ▶ HYDRAULIC SLAB AND BILLET PILERS
- ▶ STRIP AND SHEET OILING EQUIPMENT
- ▶ SHEET SCRUBBER AND CLEANING LINES
- ▶ HOT SAWS—ROCKING AND SLIDE TYPES
- ▶ HOT BEDS—COOLING BEDS—TRANSFERS
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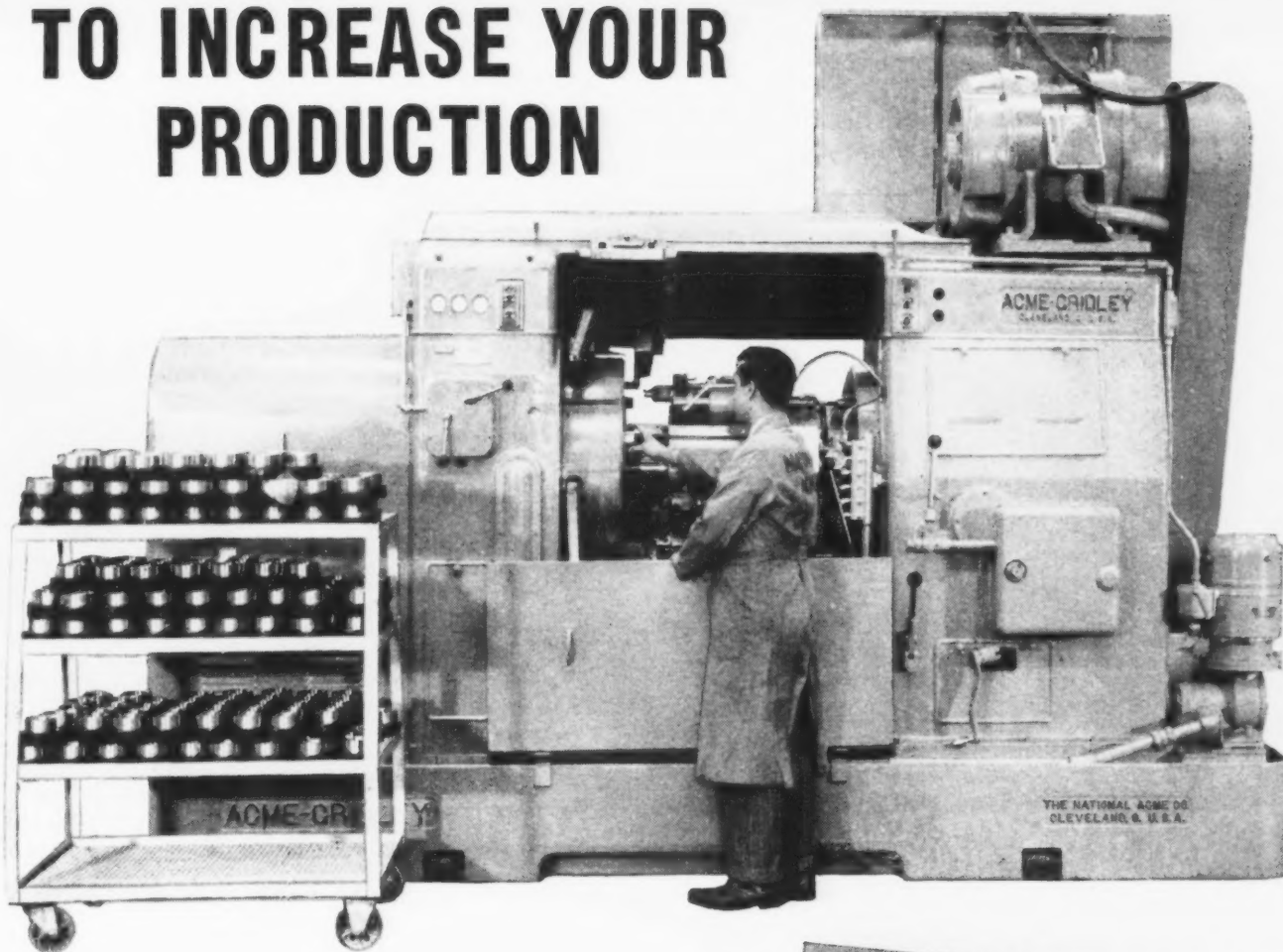


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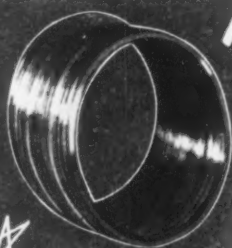
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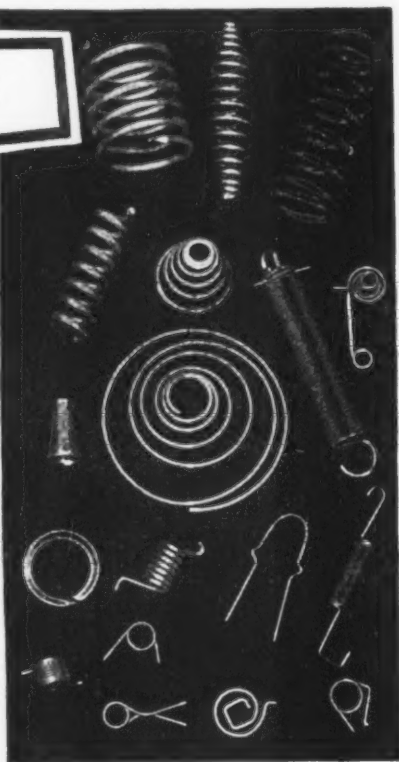
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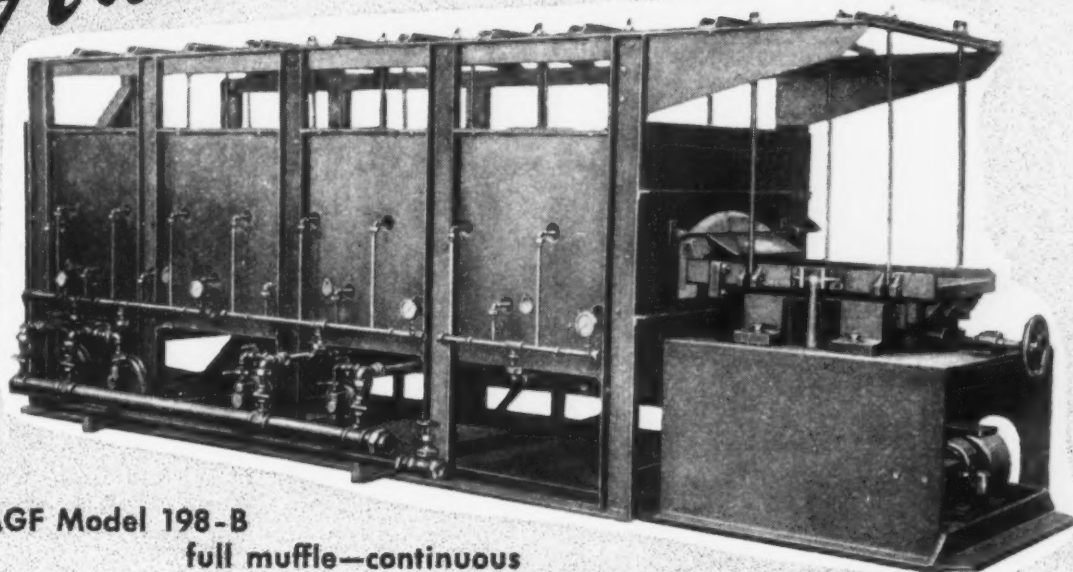
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## THE IRON AGE Newsfront

**ZIRCONIUM CAN BE SOFT SOLDERED** and silver soldered using conventional brazing techniques, Battelle engineers report. Their method applies a replacement zinc film on zirconium and its alloys.

**FREIGHT ADVANTAGES BECOME MORE IMPORTANT** with each rail rate increase. But few steelmakers look to freight umbrellas for absolute protection. Absorption is legal on an individual basis. And high fixed costs sometimes make it advisable to produce and sell at a loss rather than not produce at all in slack times.

**STEEL CLAD WITH ALUMINUM FOIL MAY SUB FOR TINPLATE** in some applications. Development work shows the product may be rolled and formed. Market potential is good.

**STEEL COAL STOCKS AVERAGE 60 DAYS' SUPPLY.** BUT some companies with limited storage facilities will be pinched if a strike should last more than 3 weeks.

**WSB'S COAL WAGE INCREASE** of \$1.50 per day breaks down like this: \$1.05, cost of living; 45¢ to wipe out "inequities". In steel wage arguments last summer, high coal mining wages were cited. It looks as if Messrs. Lewis and Murray were playing leap frog.

**GOOD USE OF ENFORCED DOWNTIME** was made by some auto companies during the steel strike. Quick changeovers now in progress were made possible by advance work by production men in idle plants.

**TITANIUM FROM LOW GRADE ORES** is being extracted by a new method developed by U. S. Bureau of Mines. In semi-pilot plant operation, 85 to 90 pct of titania has been recovered. Titania is precipitated after being dissolved from slag solids with sulfuric acid.

**SLOW DOWN ON ELECTRO-MAGNETIC TYPE LOUDSPEAKERS,** NPA has signaled. Manufacturers who were changing over from the permanent-magnet type speaker because of shortages, now have to face another hurdle because of short copper supply.

**A 60-TON CARGO CAPACITY AMPHIBIOUS VEHICLE,** pilot model of a super-DUKW will be shown West Coast Army officials soon. Army Transportation Corps says the big vehicle—9½-ft tires—is highly maneuverable. When perfected it may solve litterage problems, help clear beaches during military landing operations.

**SUDDEN CUT IN STEEL PURCHASES** by farm equipment producers is blamed on strikes in the industry. Atop this, the outlook for equipment sales in first half of 1953 is not too promising.

**LANDING MAT PROGRAM IS REVIVING.** One Midwestern mill has 63 pct of its hot-rolled military setasides scheduled for mats. This includes cleanup of the old model and inauguration of a new model.

**HIGH TENSILE STRENGTH ALUMINUM PRODUCTION** at considerably lower costs may be possible through use of transverse flux heaters. Sheet will move between two sets of coils for faster, cheaper heat treatment in a setup now under construction.

October 30, 1952

NEWSFRONT

NEWSFRONT

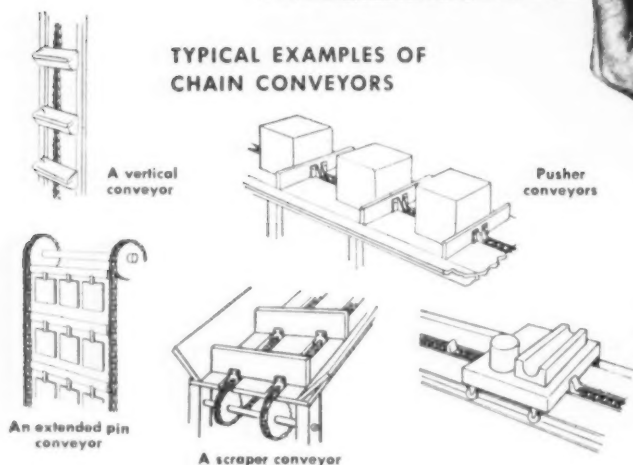
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#### TYPICAL EXAMPLES OF CHAIN CONVEYORS



No matter how modern your production equipment may be, old-fashioned hand "push-pull-carry" methods of moving materials can keep your operating costs high!

To obtain all the benefits of mechanized production, take the "hand" out of handling with Rex and Baldwin-Rex Chain Conveyors. These efficient materials movers can help you increase production, lower costs, raise profits, better working conditions.



Chain conveyors offer you many advantages. They can run in any direction . . . horizontally, vertically, up and down inclines. They can operate at floor level or at any desired working height. They can carry virtually any type of product through practically every production stage faster . . . at far lower costs than manual handling. They can pace your production operations . . . assure a steady flow of material for the production or processing lines. And, because of this, they eliminate the need for stock piles at machines . . . eliminate costly "waiting time" at the operator level.

Chain conveyors eliminate need for wide aisles . . . assure most effective use of floor space. They eliminate need for storage space, high maintenance and service costs required by other types of handling equipment.

For some helpful suggestions on the use and cost-reduction possibilities of chain conveyors, send for your copy of the informative booklet, "Build Profits by Cutting Handling Costs." Address: Chain Belt Company, 4755 West Greenfield Ave., Milwaukee 1, Wisconsin.

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# MEDICINE: Do You Need Plant Dispensary?

**Smaller plants think medical departments are too expensive . . . It may be too expensive not to have them . . . Part time plans urged . . . Compensation case histories—By T. Metaxas.**

Walking home from work a young girl slipped and fell down a flight of stairs. She broke her back.

At the hospital she was plastered up and pronounced a permanent invalid. Soon an "accident" lawyer was consolingly at her bedside. A few questions about her working conditions produced the hook on which he needed to hang his case.

Before the Workmen's Compensation Board he argued that this girl would never have fallen down the stairs if her eyesight had not been ruined by close-vision soldering work at the metalworking plant that employed her.

Of course, her family doctor co-operated. A physician will often give the benefit of any doubt to a patient who is striving for all the compensation he can get. And the burden of proof on whether the girl's case was valid or not rested on her employers. They had no medical service that could have checked her eyesight, nor a system of pre-employment physical examination that could have recorded the fact of her weak eyes and made her ineligible for her present job.

**The Economies**—Small and medium-sized manufacturing firms without medical services of some kind, whether they be full-time or part-time, are finding it terribly expensive in cost and in loss of good will, Dr. Kenneth C. Peacock, New York City physician who for 25 years has been a specialist in industrial medicine, told IRON AGE.

Dr. Peacock has statistics to prove it. A medical department costs a fraction of 1 pct of the payroll. Most small manufacturing plants watching the passage of

every penny through the ledger books regard a medical department as an expensive frivolity.

Not so, says Dr. Peacock. A part-time medical service, employing a physician who would always be on call if not physically at the plant, and a nurse, costs from 25¢ to 50¢ a week per employee.

Balance this cost against results of this recent survey: 2000 firms employing about 1.2 million workers indicated a saving of from \$3.50 to \$5 for every dollar expended for medical departments. These savings resulted from sharply reduced absenteeism, labor turnover, accidents, occupational disease, insurance rates. The value of intangibles such as morale and good will are incalculable.

Yet Dr. Peacock estimates that 95 pct of small plants do not have medical services. These manufacturers have no real idea of the benefits and an exaggerated idea of the costs.

**How to Start**—If a manufacturer is sufficiently swayed by these statistics to be interested in instituting a part-time medical department—on his own or in conjunction with other nearby plants—here are the steps to be followed:

(1) A company survey to fit a specific medical plan to needs of the plant. Character of work, accident history, number of employees, occupational diseases, compensation payment history are considered.

(2) Remembering that the aim of in-plant medical department is not to act as a full-fledged hospital but as a department of preventive medicine, a dispensary is sensibly equipped with a sterilizer, instruments for minor surgery.

This dispensary would be suited for periodic physical examinations. It would shuttle off difficult cases to specialists and hospitals. Nursing service could be either full-time or part-time. Many plants starting a dispensary find that presence of a full-time nurse is invaluable.

(3) A system of physical exam-

**SPEND ONE DOLLAR AND SAVE \$3.50 to \$5.00**



Absenteeism  
Labor Turnover  
Accidents  
Occupational Diseases  
Insurance Rates

## HEALTH: Community Medical Plan

**Medical group works on plan to establish local community health centers . . . Would be self-sufficient and provide all facilities . . . Cost would be around \$2 per person per week.**

Sometime in the future American Federation of Medical Centers may ask you as a manufacturer and a community leader to support a community health center. This will be a self-maintaining unit of medical people capable of meeting all the problems of your community. The medical team will be housed in a community center, owning facilities of the latest type for medical, hospital, surgical, dental, and eye care services.

Results of AFMC's program will not be felt for another 15 to 20 years. But the roots of its campaign are in today's need for comprehensive medical service for workers and their families.

**Complete Protection**—The plan will have a three-facet appeal to many businessmen. It may prove to be private enterprise's answer to

### AFMC Community Health Plan

AFMC's community center health plan is designed to provide comparatively inexpensive curative and preventive medical care for individual communities. It would include a self-contained medical center consisting of a clinic, a hospital, modern diagnostic and treatment facilities and a balanced staff of general practitioners, specialists, dentists, nurses and technicians.

Originator of the plan was Dr. Edgar H. Norris, a director of the American Federation of Medical Centers, Inc., 3319 John R St., Detroit.

bumbling plans for socialized medicine. It may offer your workers and their families complete medical protection. And it may be a powerful factor in improving the community in general by uplifting

the standard of inhabitants' health.

It's estimated by AFMC that such a community medical center can be self-sufficient if it charges from \$1 to \$2 a week per individual. The center will administer itself and provide the most modern medical techniques for the community. Policies will be made available through insurance companies to individuals and families on a voluntary basis. Participation by employers can be arranged.

**Not Expensive**—Even for isolated centers less than \$100 a year per individual can furnish health protection. Perhaps it may be possible to reduce this sum as participation increases. However, the cost compares favorably to today's per capita expenditure for partial health care, says AFMC.

It's acknowledged industry is a heavy contributor to community medical facilities—in addition to maintaining dispensaries within its plants. AFMC says industry can cut down its "charity" donations and assure that any money it does contribute to the community center plan is judiciously used.

## Special Report

*Continued*

ination would be set up. New workers would be examined to protect them and the company against erroneous job placement. Other workers would get periodic examinations.

One company that held its first plant examination some months ago discovered that a valued foreman who liked to display his physical might by lifting up one end of a vat with molten wax had a heart block. Such exertion could have killed him.

Now, this foreman does no lifting and continues as a key man.

**False Economy**—Some smaller manufacturers rely on other personnel absorbing work roles of their absent fellows. They believe that absenteeism under this system costs them little. But the loss of plant efficiency, multiplying day

after day, may be as deadly as if they permanently sliced off 5 pct of their work force.

Companies first applying under workmen's compensation laws are graded as to category and they pay conforming rates. These rates are adjusted when an accident experience record evolves. A few serious accidents in which a small firm is found culpable could undermine its financial structure by raising its rates to exorbitant levels.

**Vulnerable**—If a plant has no medical department to keep a running account of employees' health the plant has little protection against claims. It has no way of maintaining plant efficiency through better employee health, nor any advice on health of older workers soon to be pensioned.

One company found that its

medical department paid for itself when it successfully cleared itself in the death of a workman. This plant hired a veteran. He passed a physical but when he got himself into difficulty at the plant because of shoddy work he was sent to the plant doctor. The vet confided to the physician that the voices that had followed him all through the war were back again, this time shouting above the din of the machinery.

The worker was clearly a psychotic, dangerous to himself and his plant associates. He was seized with an attack and died. The family won a compensation award from the board. But the company fought the case in court and had the decision reversed. The reliable witness who turned the case was the doctor. His evidence was the worker's case history.



## COAL: Where Is Pay Rise Loophole?

**Administration must consider inflation minded public while finding right way to give miners full \$1.90 per day pay rise . . . How the White House intervened—By A. K. Rannells.**

The Administration this week was exploring all the loopholes to make palatable to an inflation-minded public a coal miners' pay increase that had overshot the Wage Stabilization Board mark by 40¢. White House intervention in what amounted to a strike against WSB after the industry granted miners \$1.90 per day brought a pledge of cooperation from John L. Lewis, head of United Mine Workers.

The striking soft coal miners were starting back to the pits as Washington huddled with the coal industry and union to find a face-saving way to allow that troublesome 40¢. Coal operators were reported ready to pay the \$1.50 per day permitted by the wage board while holding the 40¢ in a special fund for the miners.

Now ardently a supporter of Gov. Stevenson, Mr. Lewis was reported willing to wait until after the elections for a reversal of the WSB ruling. This would extricate the Democrats from an embarrassing situation of either yielding to inflation or locking horns with labor on election eve.

**Seek Way Out—**A White House source told THE IRON AGE that Mr. Lewis, Roger L. Putnam, director of Economic Stabilization, Federal Mediator David L. Cole, and Harry Moses, of Bituminous Coal Producers Assn., had been instructed to get heads together and arrive at an answer. It seemed apparent that it was up to the Administration to work its way out of this mess since the union and industry had already arrived at an agreement.

There was no doubt that a friendly Administration would find some method to give the miners what they had won. Mr. Putnam had asked for additional

information from the mine chief and Mr. Moses. He was expected to send this along to WSB for review.

Break in the strike came with a sudden summons for a Sunday night meeting of labor, industry and government officials at the White House. Events after the half-hour meeting moved with clock-like regularity.

**Return to Work—**John L. Lewis telegraphed district presidents to instruct the miners "to return to work at once."



**FRIENDLY TERMS:** President Truman appreciates the election sentiments of these coal miners. He is shown after a speech in Wilkes-Barre last week. Question in miners' minds then was if their friend in the White House would let them down on pay.

On Monday, Economic Stabilizer Roger Putnam called upon Wage Stabilization Board to meet on Tuesday and begin a review of its ruling.

"It will require a reasonable time for a review of attendant facts," Mr. Lewis told the miners. "It is my opinion that our industry should be operating during that period."

No confirmation could be obtained that Mr. Lewis had wangled a flat pledge that the miners would eventually get the full increase granted under the labor-industry agreement. But it was

believed in most quarters that such assurance had been obtained in view of his stubborn resistance to any cut.

**Stand Pat—**Most quarters also believed early this week that WSB would stand pat on its former ruling after a review, even in view of the implied White House position. Even so, it was said, there would still be two courses remaining open.

Mr. Putnam could overrule the board on his own authority. Or, he could pass the buck right on up to President Truman.

Reports coming into Washington early this week indicated that the week-long coal strike had not alarmed steel firms. Most mills and coke ovens, according to In-

terior Dept. reports, had up to 45 days or more supply on hand as of the beginning of October.

### Sheet-Saving Suggestions

A Westinghouse Electric Corp. employee has come up with a prize-winning suggestion which will save the firm 334 square in. of sheet steel in a punch press operation.

Accountant Russell Drennen received \$3760 for suggesting substitution of an odd-sized 21½ in. x 107½ in. sheet for standard 23 in. x 115 in. sheet. Metal saving results from scrap savings.

## CARS: Shortage Cuts Steel Shipments

**Pittsburgh district particularly hard hit by freight car shortage . . . Thousands of tons of finished steel awaiting shipment . . . Truckers don't help out—By J. B. Delaney.**

Shortage of freight cars is offsetting record-breaking production by the nation's steel mills. Steel traffic managers are fighting a day-to-day battle for cars to hurry finished products to hungry consumers. Few of them see much chance of improvement over the next several months.

Shortage is particularly acute in the Pittsburgh district, where lack of cars has forced producers to pile thousands of tons of finished steel. Tonnage on the ground varies from day-to-day, depending on the car availability pattern. One firm has had as much as 10,000 tons awaiting shipment.

Dearth of cars also has slowed movement of scrap in the major consuming areas. In the Pittsburgh district, consumers are applying all the pressure they can to increase incoming scrap both for building scrap inventories and to "make" cars available for finished steel shipment.

**Trucks Don't Help**—One reason why Pittsburgh is so hard hit, apart from the concentration of steel producers in the area, is that little additional help has been available from trucking companies, which have eased the situation in other states.

Truckers say they have no desire to move more rigs into Pittsburgh due to Pennsylvania's weight law, which is strictly enforced. The truckers point out that in the Keystone State, a tractor and tandem semi-trailer is permitted to haul a "pay load" considerably below allowable weights in such states as Ohio, Michigan, Indiana, Illinois, New Jersey and New York.

As a result, trucks available to Pittsburgh district producers have

been no more than the number normally operating in the district.

**Fall Shortage** — Scramble for cars has been especially noticeable during September and October. Few companies are able to look ahead more than a few days at a time. Demand usually accelerates to a high pitch at tail end of the month when everybody is under pressure to clean up stockpiles of finished products.

Car shortages are not exactly new to steel producers. They have been struggling with the problem off-and-on since last war.

Car builders themselves have been plagued by material shortages, including steel. This has prevented realization of the goal of 10,000 new cars per month to offset the inevitable attrition of age and service. More cars are being scrapped today than are being built.

**Ask Help** — The car builders last week appealed to National Production Authority for more consideration of their problem.



"These bags under my eyes are caused by OPS, the gray hair by NPA, the bald spot by employment problems, my ulcers by the steel strike, and you have the gall to worry me about no towels in the men's room."

They charged the government has failed to provide the industry with a rating in keeping with its importance to national economy and defense. They said steel allotments have not been sufficient, and they charged they have been unable to find "homes" for fourth quarter CMP tickets for steel.

Car builders are operating at 50 to 80 pct of capacity due in part to lack of structurals, wide plates, and heavy castings. Car deliveries in September were only 3762 as compared with 8642 last January. Cars on order have dropped from a high of 120,251 in January to 95,377 in September. Railroads are not placing new orders, while old orders, some of them dating back 2 years, are still alive.

Compounding the problem was the 2-month steel strike and the pressure on steel producers to bring defense orders up to date before increasing shipments to less urgent consumers.

## Truck Makers Rankings Changed

Revised "percentage of industry" standings of U.S. truck manufacturers that will become effective with first quarter 1953 production have been issued by National Production Authority.

Changes in the former percentage levels, originally fixed by NPA on the basis of what manufacturers were doing in the 1947-1949 base period and now reappraised, amount to 0.36 pct in the light truck field, 1.48 pct in the medium trucks, and 1.28 in heavy trucks.

In the light truck category, the Chevrolet, Ford, GMC, and Studebaker percentages climbed slightly, while percentages for five other types either remained stationary or dropped. Chevrolet, Ford and GMC also gained in the medium truck field. In the heavy truck group, International Harvester made a gain of 0.69 pct, while GMC rose by 0.28 pct and Ford by 0.30 pct.

One result of the reappraisal is to assure the larger manufacturers of a slightly greater share of controlled materials. Total amount of materials that will be redistributed among the companies is 3.12 pct.

## FLUORSPAR: A Race for Solvency

**Zooming requirements surpassing potential production from known reserves . . . Fluorine recovery must come from phosphate rock . . . Research programs are racing against time.**

Soaring demand for aluminum, steel, plastics, ceramics, and certain chemicals has made fluorspar critical. It can now be fairly described as a strategic mineral important to a number of industries.

Recognition of its importance was belated. And we got a late start toward increasing supply to meet growing demands from a number of fluorspar consuming industries. Shortage of the most highly concentrated acid grade is worst, has been acute for the last 2 years. Now some help is on the way in expanded output from Newfoundland and Mexico.

**Not Enough**—This will help ease the immediate pinch. But neither these sources nor domestic reserves can fill the gap in our long-term supply outlook. That's why a research race against time is now underway to discover better methods of deriving fluorine from common phosphate rock. The need for unlocking (in useable form) the 3 to 4 pct of fluorine content from abundant phosphate rock was stressed in the recent report of the President's Materials Policy Commission.

A check of fluorspar consuming industries explains the rapidly growing demand. They are expanding.

**Grades and Uses**—In industrial consumption the key mineral is divided into three grades, metallurgical, ceramic, and acid.

Metallurgical grade is least concentrated. It accounts for about 58 pct of total consumption, and is used almost entirely as a fluxing agent in basic openhearth steel production. Other fluxing materials can be used, but excellent results and low cost make fluorspar the choice of the industry.

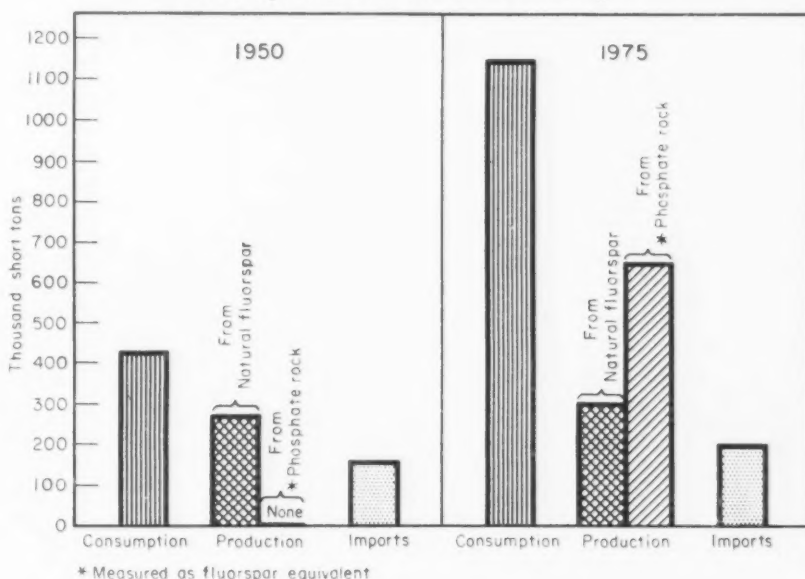
Ceramic grade fluorspar is used in manufacture of glass and enamels. It is the medium grade, accounting for about 10 pct of use.

Acid grade, most concentrated, and in shortest supply, accounts for about 32 pct of total consumption of fluorspar. It is used by industries requiring hydrofluoric acid. The aluminum industry uses

production. The only commercial source is Greenland, where it has been mined for a hundred years. But, at the current rate of consumption, this will be exhausted within about 15 years. This is where fluorspar comes in. It is used to make synthetic cryolite. Aluminum companies have been trying to acquire fluorspar mines to protect their source of cryolite as well as hydrofluoric acid.

**Reserves and Research**—United States reserves of fluorspar are the largest in the world, amounting to about 40 pct of the free

**Consumption, Production of Fluorspar**



about a third of the supply of this grade. Other big users are plastics, refrigerants, high-octane gas, uranium hexafluoride, and insecticides.

**Zooming Need**—The aluminum industry, which has been consuming 10 pct of our fluorspar, is expanding five-fold. But its fluorspar requirements are growing even more than that. In addition to aluminum fluoride needed in aluminum reduction process and some fluorspar used directly in aluminum production, increasing amounts of fluorspar will be consumed in making synthetic cryolite.

Cryolite is vital to aluminum

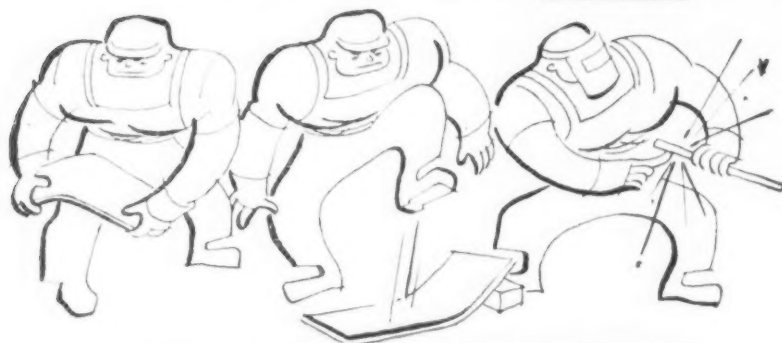
world total. Yet, at only 1950 rate of consumption our reserves could support domestic demand for just about 15 years. But our demand is expected to greatly exceed the 1950 rate. And, after meeting their own growing requirements, other free world nations are not expected to be able to export anywhere near what we need. That's why present research on fluorine recovery from phosphate rock is so important.

This research is being pushed simultaneously by Tennessee Valley Authority, Bureau of Mines, and various private companies.

**Problems of Recovery**—Phosphate rock reserves are abundant



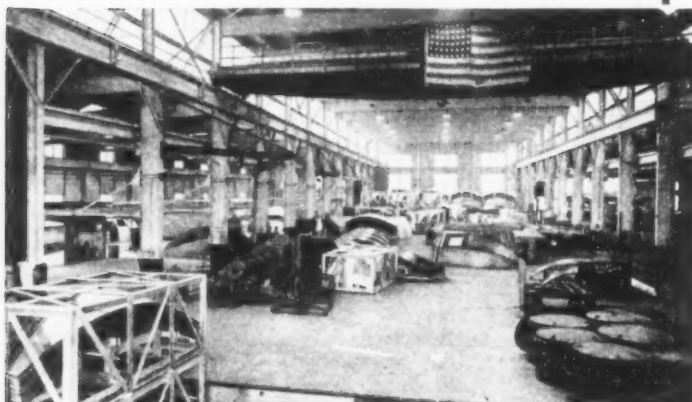
manufacturers who **KNOW**



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formed  
shapes  
stampings  
heavy  
weldments



**BRANDT**  
BALTIMORE

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**CHARLES T. BRANDT, INC. Baltimore 30, Md.**

### Raw Materials

and widespread. We are already processing more than enough phosphate rock to fill our fluorine requirements—if all fluorine content were recoverable. At present it is not. In the near future it is expected that not more than 30 pct of fluorine content will be recoverable.

Present research is aimed at overcoming three big problems: (1) Reducing the silica content of the fluorides derived, (2) bringing recovery costs down nearer the cost of natural fluorspar, and (3) boosting the amount of fluorine that can be recovered.

TVA has already installed equipment to refine calcium fluoride sludge produced as a byproduct in its calcination process to defluorinate phosphate rock for cattle feed.

Largest use of phosphate rock is in manufacture of superphosphate. Fluorine given off as a mixture of hydrofluoric acid, silicon tetrafluoride, and fluosilicic acid can be recovered as fluosilicic acid or as various siliconfluorides. But no commercial process is yet available to convert these compounds into silica-free fluorides. This is the promise of research.

### Sulfur Quota Boost Recommended

Distribution of 29,800 long tons of crude sulfur, as a supplement to recommended free-world allocations for the half-year ending next Dec. 31, is proposed by International Materials Conference.

Originally, the agency recommended that exporting nations be allowed to ship 634,800 long tons in the current half-year. IMC now has found evidence of increased quantities of sulfur available for export, primarily from Latin American countries. For this reason, IMC has suggested that the following tonnages be added to import quotas of nine countries. These are:

Argentina—6500, Australia—3500, Brazil—6800, Finland—1300, France—4300, India—3000, New Zealand—800, Philippines—3000, and Uruguay—600.

Export quota for the U. S. in the current half-year is 465,000 tons.

# STEEL: Enough for Farm Equipment?

**Producers less worried over unbalanced steel inventories . . . Hope for upcurve in business but some cut back manufacturing rates . . . "Return to normalcy"?—By K. W. Bennett.**

Farm equipment producers aren't admitting worry over the 1953 sales outlook, but recent cutbacks in their production schedules will certainly affect steel supplies in the first quarter of 1953.

Despite critical shortages in such items as alloy bars, plate, and even some sheet types, farm equipment's buying pressure on steel has lessened generally. Purchasing agents have loosened their collars, seem less worried over unbalanced inventories that are still forcing rescheduling of production programs.

They are hopeful that farm purchases of heavy equipment will continue their historical upcurve. Any dropoff will affect light equipment, light tractors, and possibly tractor attachments. For instance, plows, harrows, and discs are expected to hit a lull.

**Over-Supply** — Dealer inventories began to climb in the early spring and light tractors became, in many areas, an over-supply item. To date, one source estimates the overall dealer inventory figure at 10 pct above normal on new equipment, 20 pct on used equipment. In drought areas, or in extreme cases, the inventory may run as high as 50 pct over the norm, but this is not a dealer average, and production cutbacks are not based on that figure.

Production cutbacks vary considerably among companies and the individual product lines carried by each. Generally, light equipment and pull-behind equipment is most strongly affected, and companies have quoted as much as 10 to 40 pct cutbacks for individual products. What seems generally important—their pressure for steel has been dropping. Overall inventories are full size, if not well balanced, and they will

either hold at present tonnage levels or begin falling. Some have already reduced tonnage.

**Return to Normalcy** — Farm equipment producers are speaking of a "return to normal markets." A feeling that the seven fat years of the postwar market are now thinning and the industry will once more balance supply with demand. Save, of course, in heavy equipment lines, where demand will continue good.

This thinking may be traced to the good years of '51 and '52. In 1951 the average equipment dealer was credited with record income. In 1952, the dropoff was 5-10 pct, not too bad considering that the steel strike, the drought, and some farm equipment strikes materially cut the amount of heavy equipment available at the factory level or desired by drought stricken consumers. With this record, it appeared that the equipment market might well have reached the saturation point.

**Changing Lines** — The industry is reallocating its production space. It will give stronger consid-



"A Paul Jones to see you, sir, regarding a gear off his machine."

eration to tractor attachments as opposed to pull-behind, wheeled types. This is a long term trend, would mean less steel used, but would affect steel purchases over a period of years. More current is the move toward expanded capacity for heavy equipment production. At least one major producer will have upped his heavy tractor production by 100 units per day by 1953 in a single plant. Other large producers have been considering similar moves, though production dates weren't announced.

Farm equipment men say frankly that they will have to do a selling job in 1953. Optimists say that with current forecasts on heavy equipment sales and with a stiff selling campaign in all lines, they could hold the 1951 sales level. Pessimists, and some stockholders, advocate even further production cutbacks.

## Plated Gun Tubes Mass Produced

Automotive engineers and ordnance specialists combined forces at Oldsmobile in development of mass production plating of 90-mm cannon tubes at the Oldsmobile gun plant in Lansing, Mich.

Plating of the spiral bore to a fine tolerance was requested by Ordnance to increase wear resistance of the rifling and to maintain a longer accuracy duration of each barrel.

Automotive engineers brought in their knowledge of plating processes and equipment installations gained in years of developing plating on bumpers, grilles and trim. Within 5 months volume plating was in progress.

The problem was to develop processes for military use which would solve difficulties of plating thickness and adhesion in the barrel.

Mechanical engineers worked out the handling problems, electrical engineers designed the electrical system and plating facilities. In the electrolytic process, the anode is inserted in the 15-ft gun tube at the muzzle end. Plating tanks are 30 ft in depth and the process takes up to 4½ hr.

## ALUMINUM: Another Firm Wants In

**Wheland Co., Chattanooga, Tenn., firm tells DPA it wants to build a 150 million lb per year reduction plant . . . DPA calls bid "reasonably comprehensive"—By R. M. Stroupe.**

Newest addition to the group of companies hoping to enter the aluminum production field is a Chattanooga, Tenn., firm which believes it isn't sufficiently diversified. It produces gray iron castings, guns for the Army, sawmill machinery, and oil well drilling equipment.

The Wheland Co., manufacturers of sawmill machinery for more than 80 years, wants to build a plant in the Chattanooga area with a yearly capacity of 150 million lb of aluminum. This quantity would amount to more than one-third of the 200,000 tons of added capacity Defense Production Administration says the U. S. requires.

**Under Discussion**—Wheland President Gordon P. Street heads a delegation which has been discussing with DPA such factors as:

1. Availability of electric power. Wheland says power, presumably from Tennessee Valley Authority, is ample.
2. Labor force, described as sufficient to operate the facility.
3. Transportation, said to be adequate.
4. Location, pointed out as well inland in a semi-mountainous region.

To use Wheland figures, it would require an investment of about \$70 million to put the company into the 150-million-lb bracket. Though the company describes a venture of this size as a "major undertaking," it is apparent that some of the capital will come from non-Wheland sources if DPA provides approval. A new entrant in the aluminum field could reasonably expect favorable fast tax write-off terms from the government.

**"Reasonably Comprehensive"**—DPA Aluminum Boss Sam Anderson, who conferred with the Whe-

land group in Washington, told THE IRON AGE the Wheland proposal is "reasonably comprehensive." He did not comment as to whether the Chattanooga firm presented figures more or less convincing than those of, say, Olin Industries, one of the companies known to be hopeful of getting a foothold in the aluminum production business.

Not emphasized by Mr. Street and his associates after the talk with Mr. Anderson was the availability of raw materials, particularly alumina. It is known that Wheland representatives have talked with Alcoa officials in Tennessee about supplies of alumina, but results of the conferences were not revealed.

**Other Bids**—If all the 200,000 tons of new capacity are to come from sources other than "big three" plants, DPA may have to approve facilities construction by a plural number of current non-producers. Mr. Anderson will say only that the list of companies which have come in with proposals numbers "less than ten," but the actual figure appears to be nearer six. Reported to have have put in



"Have you noticed how sulky he's been lately?"

their bids ahead of Wheland were Olin, Spartan Aircraft, and Kennecott Copper.

Government feeling now is that Spartan is less eager to produce aluminum than it was last winter. If Spartan plans no further effort to break into the field, and if there are no proposals by additional firms, DPA may feel justified in awarding the greater share of new capacity to present-day aluminum makers.

### New Goals Will Show Direct Need

Future industrial expansion goals set by Washington are to reflect more accurately direct mobilization needs for defense products and services.

Revised criteria for determining expansion goals were issued last week in a joint Defense Production Administration-National Production Authority memorandum.

In the future, expansion goals for full mobilization are to represent the extent to which prospective supply or capacity would be insufficient to meet annual requirements for an assumed 5-year war

**Support Current Program**—As for partial mobilization, expansion goals are to be set at the level of supply necessary to support the currently-projected military preparedness program. Such goals will include stockpile requirements, plus unrestricted civilian consumption after 1953, and are to take into account such factors as increases in population and technological changes.

For some commodities or services, satisfactory information for either partial or full mobilization may not be available, the government admits. In these cases, interim goals that are based on "minimum apparent requirements" may be issued.

The new memo presents two lists of expansion goals. First lists 176 industries and products for which approved goals had been set as of Sept. 30. Second presents a tentative listing of 78 pending goals now in the process of being developed.



## Write-Off Approval Rate Drops

Applications for rapid amortization of iron and steel manufacturing facilities now represents about 10 pct of the government's backlog of such applications. Total dollar volume of the backlog is estimated by Defense Production Administration at about \$3.2 billion.

Chemicals and allied products lead the list in dollar volume of amortization certificates approved between June 20 and Sept. 5. The total of 158 certificates issued to this industry accounted for \$392,738,000—about 20 pct—of the total of 2073 certificates issued during this period. Another 15 pct went to public utilities with a total of \$288,611,000 and railroads and other transportation and storage accounted for \$292,516,000.

**Iron Ore**—Fifth program in dollar volume of approvals during this period was iron ore mining. This industry had 14 certificates approved for a dollar volume of \$163,259,000. In the previous period of accounting, iron ore mining generally received only eight certificates valued at \$12,871,000.

In recent weeks, the rate of approvals has dropped sharply. In August and in early September, the rate of approvals fell below the \$100 million per week mark for the first time since the program began operating.

New applications for fast write-offs are being filed at a much slower rate today, DPA reports. Peak was hit in February and March of 1951.

## DMPA Aids Manganese Project

Government aid is to be given in a project for developing an economical method of extracting manganese from wad ores.

Defense Materials Procurement Agency has negotiated a contract with Southwestern Engineering Co., of Los Angeles, under which wad ore deposits will be sampled, analyzed and given beneficiation tests.

Under the contract, which runs for 18 months, DMPA will pay the engineering firm \$98,400 for organizing and supervising the work.

## International

# Red China Shows Machine Tools

Western Europe was given its first glimpse of Communist China's machine tools at the September Leipzig Fair in the Soviet zone of Germany. Machines shown were basic and multi-purpose types, but designs were 10 or more years old. Finishes varied on the 30-odd exhibits, but care had obviously been taken with all precision parts and guide-ways.

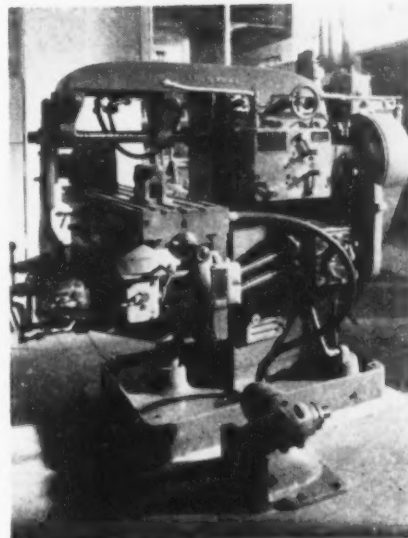
The Chinese machine tool industry really got going only last year. Most of the models displayed had been made in 1952. They were not for sale: this was a purely political display.

At right is a universal milling machine with a table 1900 x 350 mm. Longitudinal traverse is 730 mm with 18 feeds giving 15 to 600 mm per min; traverse table movement is 250 mm. Eighteen spindle speeds yield 16 to 400 rpm.

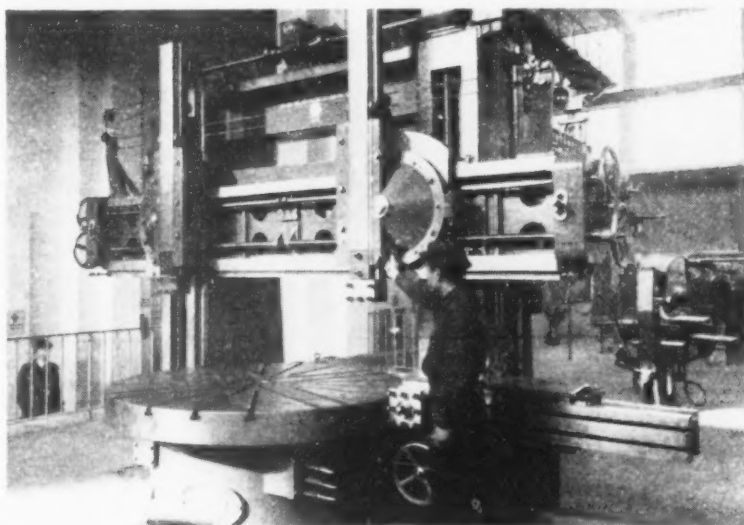
Below is the largest machine China showed at Leipzig—a 25-ton double-column vertical boring machine. It has one side cutter and a maximum cross slide height of 1220 mm. The 2030-mm diam table can be rotated at eight speeds from 15 to 29 rpm.

Other Chinese exhibits included a vertical slotter with a 508-mm stroke and six cutting speeds, and a universal grinding machine with a center height of 180 mm. Slotter's table diam is 863 mm, longitudinal traverse 915 mm, and cross movement 762 mm. Power source is a 6-hp motor.

Workhead speeds on the grinder range from 38 to 388 rpm in six steps, with table feeds variable up to 7620 mm per min.



Chinese universal milling machine gets up to 400 rpm, has 18 feeds from 15 to 600 mm per min.

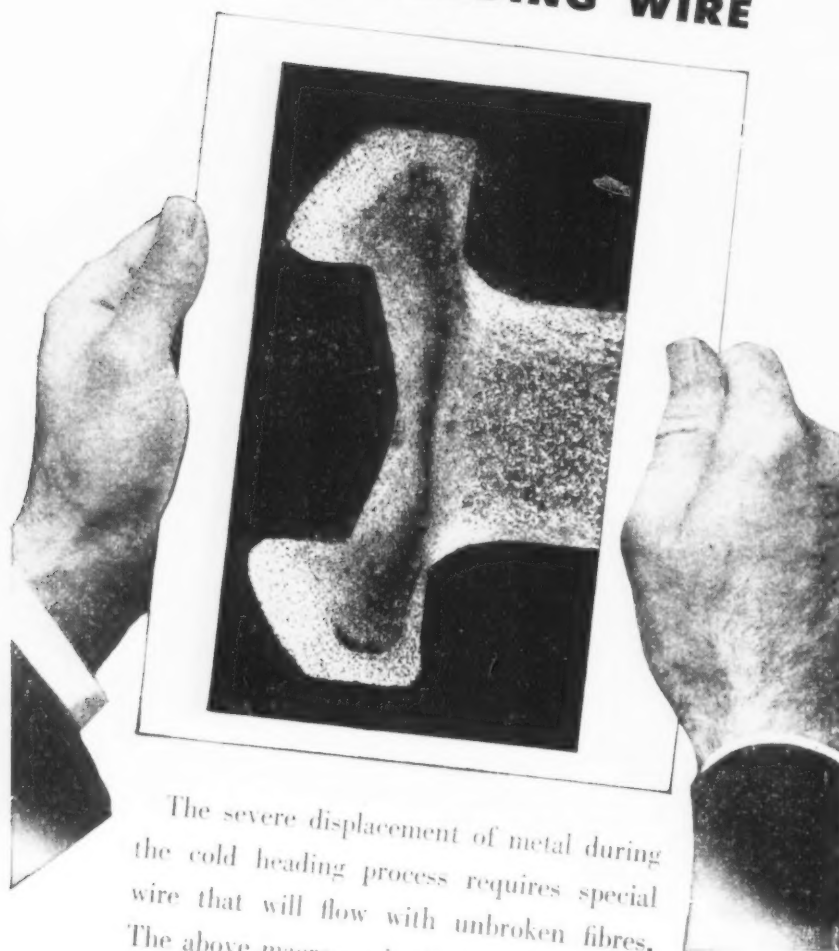


This 25-ton double-column vertical boring machine was the largest China showed at the Leipzig Fair. Purpose of last month's exhibit was political, not actual sales.

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Keystone's "Special Processed" Cold Heading Wire is available in C-1035 and C-1038 analysis for high strength, heat treated screws and bolts.

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### International

## ALLOY STEEL: Reds

Red countries have enough alloying materials to meet armament, industrial needs.

There's no chance that Red production gears will be gummed by a lack of steel alloying materials. Though Russia and its satellites do not have the variety of alloy steels available to western nations, there's no doubt that they're producing enough to meet armament and industrial needs.

It's virtually impossible to obtain figures on alloy steel production behind the Iron Curtain. But IRON AGE correspondents, by following East-West trade trends, watching market prices and tracking down rumors, have been able to get an accurate slant on the alloy steel situation in communist-dominated countries.

**High Quality**—Not only is supply adequate, but quality of Red alloy steel is on a par with western output. In Switzerland, vanadium alloys, tungsten steels, nickel-chromium armor steel and non-magnetic steel produced by the Czech Poldi Works are purchased in preference to British and German products.

Tests of Polish tool steel have shown that it is being made in accordance with western specifications. Same is true of Russian alloys.

**Cut - Rate Columbium** — World-scarce columbium is not causing any headaches behind the Iron Curtain either. Russia has been using it in heat-resistant steels for jet engines since 1949. Clearing arrangements between Russia and Czechoslovakia are further indications that columbium is plentiful. Market price for the metal is \$5,500 per ton, but Russia has been able to sell it to Czechoslovakia for only \$1,900 per ton.

The East also has adequate stocks of titanium, zirconium and tungsten. Molybdenum continues to be short but apparently is not proving much of a problem.

THE IRON AGE

## Have Plenty

Until 1950 Russia imported most of its molybdenum from Norway, Chile and North Korea. Additional supplies were received indirectly from the U. S. Much publicity was given to a particular shipment of 50 tons of molybdenum that was sent from the U. S. to Liverpool and then re-shipped to Russia. But there have been many other such transactions which have not been publicized.

**Imports Drop**—During the last 2 years Russian imports of molybdenum dropped sharply. It is not known whether this means Russia is now producing its own moly or is substituting another metal.

Obviously the Russian molybdenum plight has improved. Late in August, 25 tons of South American moly were offered to the Russians at above price. The offer was turned down. Prior to 1950 the Reds were gobbling up all available molybdenum regardless of cost.

**Cobalt Short**—Cobalt supply is still critical in Russia and undoubtedly something else is being substituted for it. Beryllium however is in such ample supply that OMNIPOL, a Czech export firm in Zurich, is offering it for export.

Russian production of nickel, chromium and ferromanganese also seems to be in excess of demand. Even once-short vanadium has eased as evidenced by the drop in imports and removal of vanadium alloy steels from Russia's list of critical materials.



"And I suppose you'll be wanting a private bath, sir."

October 30, 1952

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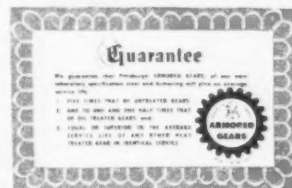
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# STEEL: Are Rations Too Slim a Diet?

**NPA counts on carryovers offsetting what appear to be poor allocations for first quarter '53 . . . Civilian producers get about one-third pre-Korean rate of consumption.**

Anticipated substantial carryovers of fourth quarter unfilled Controlled Materials Plan tickets for steel and any bonus production of ingots will be the factors offsetting what appear to be dimly low first quarter '53 steel allocations—hopes National Production Authority.

Many more manufacturers are besieging NPA divisions with urgent requests for more steel. Pressure on manufacturers is the rising rate of orders.

**60 Pct of Third**—Generally, civilian-type production is restricted to about one-third the pre-Korean level of steel consumption. Specifically, allocations are on a basis of 60 pct of third quarter levels. Allocations for aluminum stay at 55 pct of base period use and copper remains at 50 pct of base.

Some industries will get less, others more than the general 60 pct, depending on essentiality. For example, producers of musical instruments will get 41 pct of base while portable lighting equipment manufacturers will get 110 pct.

NPA is countering cries of imminent shortage from some industries by arguments that steel allocations run on a basis of 60 pct of third quarter allocations. And fourth quarter uncashed tickets may be carried over into the first quarter, yielding more steel.

**Slim Carryovers** — Stimulated by improved markets, many manufacturers are pushing their assembly lines and are using up much or nearly all of their fourth quarter tickets when they can get them filled. These manufacturers feel they are sensibly eating their cake now and will fight for more steel in the first quarter. Carryover of orders for some industries

may be too small to balance out supply deficits.

Additional steel requests have come already from makers of autos, kitchen ranges, food freezers, lawnmowers, clothes driers, metal furniture, and others. Small appliance manufacturers report that they don't have enough steel to get them past Dec. 31.

Also, there have been requests for additional steel for garbage cans, mattresses and bedsprings, and other similar categories, all of which usually receive better than average allocations because of their relationship to health.

**"No Bad Shortages"**—But NPA is standing by its guns—that there won't be any "serious shortages." It means by that there may be a spot or temporary lack of materials with an individual manufacturer—not industrywide.

In the case of an individual shortage, NPA would presumably come to the rescue with a supplemental allotment on a basis of hardship. At the retail end, a consumer would have to take the style or model available or wait.

Despite this stand, NPA is mak-

ing a survey to find out just what the situation is with respect to carryovers and related matters. It is also depending upon a continued increase of steel ingot production.

"If and when supplemental steel becomes available," says NPA Administrator R. A. McDonald, "we will take another look at unsatisfied defense requirements and increase consumer levels where we can on a fair and equitable basis."

Nothing much can be expected in this direction, however, before the middle of November. That is when NPA will have a better idea of carryovers and mill bookings.

## Industry Controls This Week

**Aircraft**—Amend., Supp. 1, Del. 1 gives Defense Dept. authority to schedule or reschedule deliveries of orders of "B" products for Aircraft Products Resources Agency.

**Communications**—Amend., M-77 allows telephone and telegraph companies greater leeway in self-authorizations for controlled materials.

**Construction**—CPR 74 establishes ceiling prices for independent sellers of prepared concrete reinforcing bars and reinforcement materials.

**Copper**—Amend., M-11 permits copper controlled materials producers to obtain supplies of other controlled materials by self-certification.

**Durable Goods**—Amend. 1, CPR 161 removes certain consumer durable goods from coverage under CPR 161.

**Iron**—Amend. 3, M-80 places alloy iron among the alloy products described in M-80. Amend. 1, CPR 169 establishes ceiling prices for iron ore produced in the Spring Valley area of southern Minnesota.

**Radio, TV**—Amend. 7, Rev. 1, GOR 5 reimposes price controls on radio, TV and phonograph parts.

**Steel**—Amend. 2, M-1 increases lead time on clad and coated steel products by 45 days.

## Curbs Off Wages Under \$1 Per Hr

All workers paid \$1 per hr or less are now exempt from wage controls.

This new ruling, put into effect by Economic Stabilization Agency, followed a Wage Stabilization Board decision to permit wage increases for less-than-\$1-per-hr workers without approval.



"Have you noticed they all react the same way?"

## OIL:

**Drillers receive 30 pct of first quarter tubing, casing needs.**

Oil and gas operators have been allotted a total of 261,527 tons of casing and tubing from regular mill production for the first quarter.

Petroleum Administration for Defense says this tonnage is about 30 pct of the amount actually needed by operators to carry on planned drilling programs and to replenish inventories depleted by the steel strike. Operators' needs for the first quarter are officially estimated by PAD at 868,830 tons.

Tonnage actually allotted reflects primary authorizations and amounts to about 80 pct of the tonnage of casing and tubing expected to be available for the quarter. Operators who want supplementary allotments should file a new extra-ration form (PAD-17) before Nov. 1.

In addition, PAD intends to grant priorities assistance on casing and tubing to be produced from conversion steel. Deadline for applications for conversion allotments also is Nov. 1.

First quarter allotments do not include some 22,000 tons of tubular goods earmarked for emergency field stocks in regional warehouses. These stocks are being reserved for wildcat drilling and for other emergency uses.

## Warehouse Steel Decontrol Study

Decontrol of secondary steel products for warehouses is being considered by National Production Authority. Such a move has been unanimously recommended by NPA's industrial steel products warehouse industry advisory committee.

Move had been informally approved by NPA when the steel strike forced reconsideration. Present NPA attitude is to wait and see how first-quarter 1953 demand matches up with supply.

Industry members also are seeking revocation or revision of the order (Dir. 3, M-6A) which requires warehouses to hold 50 pct of

incoming shipments of some steel products for a period of 15 days after receipt for possible military orders. NPA says it believes the backlog of military orders that resulted from the steel strike will be cleaned up by the end of November.

Supply of round bars 2 in. and over probably will remain "critical" throughout first-half 1953 NPA predicts. The agency says no immediate improvement is in sight, but supplies of other shapes and forms probably will loosen during the first quarter of next year.

## Time Off to Vote Okayed by WSB

Employers who give workers time off without loss of pay to vote in the Nov. 4 elections will not run afoul of Wage Stabilization Board rules.

WSB made this fact clear in Resolution 108, dated Oct. 21, stating that under the circumstances time off without pay loss "shall not be charged against any amounts available under any of the board's regulations or resolutions."

## Clad Steel Lead Time Boosted

Lead time of clad or coated steel products—principally sheet, strip, and plate—has been increased by an additional 45 days.

This additional period brings

the total lead time for such products to 120 days or 135 days, depending upon whether the plate or sheet has a 75- or 90-day lead time (Amend. 2, M-1).

George C. Lovell, chief of the coordination and regulation section of National Production Authority's Iron & Steel Div., points out that producers of clad steels are required to place orders with a 75- or 90-day lead time for plate or sheet. But orders placed on the producers for the clad steels have the identical lead time, which means that no time-provisions are made for processing of the clad steels. Up to now, the cladders were able to adjust their schedules despite the time lag. Advent of the military setasides of M-1 made such adjustments impossible.

## Government Appointments

Harris Bateman, director, Materials Div., PAD;

Yngvar Brynildsswn, deputy administrator, SDPA;

William L. Cressman, deputy director, Iron & Steel Div., NPA;

Don S. Burrows, controller, AEC;

Bennett S. Chapple, Jr., assistant administrator, Metals Minerals Bureau, NPA;

Ralph S. Howe, special assistant, DPA;

Frank E. Johnson, deputy administrator, Defense Minerals Exploration Administration;

Thomas C. Keeling, Jr., director, Chemical Div., NPA;

Charles H. Kendall, general counsel, ODM;

Verl E. McCoy, director, Railroad Equipment Div., NPA;

A. W. Scott, member, National Petroleum Council;

John E. Timberlake, director, Iron & Steel Div., NPA;

Theodore P. Wright, consultant, Aircraft Production Board, DPA.

Leslie M. Case, director, Mining Machinery Div., Industrial & Agricultural Equipment Bureau, NPA;

Harry R. Johnson, chief, Sheet and Strip Section, Iron and Steel Div., NPA;

James Whitney Sibley, Jr., deputy director, Metalworking Equipment Div., NPA.



**APPOINTED:** New boss of National Production Authority's Iron & Steel Div. is John E. Timberlake, general manager for sales, Jones & Laughlin Steel Corp. He has been a deputy director of the division since July 1, 1952.

## Small Business Contracts Grow

Latest government figures on the amount of defense procurement labeled exclusively for small business under the "joint determination" program show the total has exceeded \$125 million and is moving upward.

Small Defense Plants Administration, which is determining contract awards in cooperation with procurement offices of the military departments, has found a steady climb both in the dollar value of defense business and the number of contracts actually awarded to small companies.

Businesses which recently have benefited from the program, SDPA says, include a small instrument firm in Pennsylvania, which won a Navy contract to produce loud-speaker assemblies; small New York and New Jersey companies which received construction contracts from Corps of Engineers; and a California firm which was awarded an order to produce electronic tubes for the Signal Corps.

## Contracts Reported Last Week

Including description, quantity, dollar values, contractor and address. Italics indicate small business representatives.

Repair of torpedoes, \$50,000, General Electric Co., Washington, D. C.  
Fuzes Mk 78 Mod 0 for Mk 12 ammunition, 280,000 ea., \$58,453, Alden Products Co., Duncannon, Pa.  
Spare parts, running contract, \$25,000, The Master Pneumatic Tool Co., Inc., Orwell, Ohio.  
Spare parts, var., \$22,753, Thew Shovel Co., Elyria, Ohio.  
Spare parts, var., \$27,697, Queensboro Pkg. Corp., L. I., N. Y.  
Spare parts, var., \$28,545, R. G. Le Tournen, Inc., Peoria, Ill.  
Power supplies, Mk 78 Mod 0 for torpedo Mk 27 Mod 4 & 32, 280 ea., \$101,483, P. R. Mallory & Co., Indianapolis.  
Replacement and spare assys., \$55,000, Northern Ordnance, Inc., Minneapolis.  
Manufacture and assemble Mk 136-0 and 136-1 demolition outfits, 4000 ea., \$60,800, H. A. Ward Co., Inc., Inwood, L. I., N. Y.  
Adapter-pin assy., var., \$47,031, Bendix Aviation Corp., South Bend, Ind., G. I. Lyman.  
Automatic drop relay, 1562 ea., \$42,424, The Hartman Electrical Mfg. Co., Mansfield, Ohio.  
Crankshaft assys., 213 ea., \$608,178, United Aircraft Corp., East Hartford, Conn., E. E. Champion.  
Cylinder assy comp., var., \$4,252,305, United Aircraft Corp., East Hartford, Conn., E. E. Champion.  
Body assy., 186,000, \$33,093, Hungerford Plastics Corp., Rockaway, N. J.  
Casing burster M9A1, MPTS for shell, 26,000, \$36,987, The Production Plating Works, Lebanon, Ohio.  
Indicators, 5126 ea., \$1,193,614, Robertshaw-Fulton Controls Co., Youngwood, Pa.  
Spares for aircraft, \$75,000, United Aircraft Corp., Bridgenort, Conn., J. M. Lemon.

Transmitters hydraulic pressure, 6965 ea., \$86,024, American Machine & Metals, Inc., Sellersville, Pa.  
Transmitters, hydraulic pressure, 1314 ea., American Machine & Metals, Inc., Sellersville, Pa.  
Kit for conversion of 1,000 and 2,000 GPD distilling units, 175, \$96,545, Badger Mfg. Co., Cambridge, Mass.  
Thermal Motor assy., 1000 ea., \$38,000, Robertshaw-Fulton Co., Knoxville, Tenn., Raphael Semmes.  
Automotive spare parts, 26790, \$81,266, Federal Motor Truck Co., Detroit.  
Replenishment of small arms parts, 1350 ea., \$36,381, Taco Heaters, Inc., Providence.  
Replenishment of other motor vehicle parts, 1000 ea., \$48,264, Ainsworth Mfgs. Corp., Detroit.  
Replenishment of other motor vehicle parts, 29000 ea., \$102,829, United Specialties Co., Chicago.  
Replenishment of other motor vehicle parts, 13250 ea., \$222,625, Houdaille-Hershey Corp., Buffalo, Vincent E. Jasker.  
Replenishment of tank & combat vehicle parts, 2977 ea., \$115,437, Eaton Mfg. Co., Detroit.  
Replenishment of tank & combat vehicle parts, 2000 ea., \$184,162, The Cuno Engineering Corp., Meriden, Conn.  
Kit replenishment, 2000 ea., \$71,600, M-D Parts Mfg. Co., Los Angeles.

## Government Inviting Bids

Latest proposed Federal procurements, listed by item, quantity, invitation No. or proposal and opening date. (Invitations for Bid numbers are followed by "B," requests for proposals or quotations by "Q.")

General Service Administration, Washington.  
Torpedoes and fuses, 75, gross SE-C-M-6642-1, Nov. 3.  
Fuses, red, 10 min., with spikes, 7, in., 75 gross, SE-C-M-6642-1, Nov. 3.

Rock Island Arsenal, Rock Island, Ill.  
Mechanism elevating assy., 35000 ea., 11-070-53-182B, Nov. 6.  
Lever traversing slide lock assy., 55000 ea., 11-070-53-182B, Nov. 6.  
Stop elevating screw assy., 24000 ea., 11-070-53-182B, Nov. 6.  
Screw traversing slide lock, 72000 ea., 11-070-53-182B, Nov. 6.  
Drum brake with drg., 200 ea., 11-070-53-209B, Nov. 10.  
Center lathe headstock, 2725 ea., 11-070-53-215B, Nov. 10.  
Countersink and drill, combined, 6700 ea., 11-070-53-215B, Nov. 10.

Yards & Docks, Porthueneme, Calif.  
Repair parts automotive for GMC equip., 451 itm, 1323-53, Nov. 12.

Watervliet Arsenal, Watervliet, N. Y.  
Steel connector assy., parts for mount mortar 60MM, 8400 ea., 53-39, Nov. 14.

Vicksburg District, Corps of Engineers, Vicksburg, Miss.  
Spare parts and tools, 1 lot, CIVENG 22-052-53-35B, Nov. 25.

Aviation Supply Office, Philadelphia.  
Clips wire rope gal. spec, 89000 ea., K 54419B, Nov. 2.

General Stores Supply Office, Philadelphia.  
Washers spring lock nonling type nickel copper aluminum alloy, 6100 e, 4-1189B, Nov. 3.

Signal Corps Supply Agency, Philadelphia.  
Coupling rigid sleeve type nickel pl brass, var., 553 32B-B.  
Shaft slow freq RF slug rack, cam assy, var., 553-32B-B, Nov. 10.  
Clip electrical, 4300 ea., 617-32-B, Nov. 13.  
Electrical conductor bushings brass and neoprene, 18450 ea., 583-32-D-B, Nov. 14.  
Shell electrical connector, 1075 ea., 626-32B-B, Nov. 14.

Navy Purchasing Office, Washington.  
Box, small arms ammo, 100000, 6742-O-B, Nov. 5.

Plug, dummy nose, shipping, nose, 350000, 6753-O-B, Nov. 7.  
End sleeves, complete with steel sleeve ring, 1000000, 6768-O-B, Nov. 12.  
Holding ring, 2, aux det water proofing for VT fuze, 6492000, 6769-O-B, Nov. 13.  
Adapters, puller, connection, pullers, gear, wheel, 3550, 912Q, Nov. 7.  
Wrenches, box, pipe, 11758, 6764-B, Nov. 12.  
Ordnance Tank Automotive Center, Detroit.  
Spacer clutch pedal pivot shaft bearing, 1000, 53-228B, Nov. 7.  
Clip drivers seat rear stop ord, 500, 53-227B, Nov. 7.  
Hub bearing rgt assy, steering clutch, 300, 53-285B, Nov. 7.  
Bearing roller cylinder, 90000, 53-315B, Nov. 12.  
Bearing roller tap sr type, 50000, 53-320-B, Nov. 12.

## Construction

### Steel Inquiries and Awards

Fabricated steel awards this week:

360 Tons, Philadelphia, Central Penn National Bank Bldg., to Cantley & Co., same city.  
175 Tons, Chattanooga, Tenn., building extension for E. I. duPont de Nemours & Co. to Belmont Iron Works.  
140 Tons, Valley Forge, Pa., highway bridge for Valley Forge interchange, King of Prussia Highway, Pennsylvania Turnpike Commission, to Bethlehem Steel Co., Bethlehem.

Fabricated steel inquiries this week:

465 Tons, St. Johnsbury, Vt., WF beam bridge with grading, drainage, sub-base guard rail and crushed gravel mixed in. Extends to Lyndon town line, Oscar L. Olson, Montpelier, Vt., low bidder.  
400 Tons, Wayne County, Pa., and Sullivan County, N. Y., steel arch and I-beam highway bridge, Pennsylvania State Highway and Bridge Authority taking bids for Joint New York-Pennsylvania Bridge Commission. Bids due Oct. 31.  
150 Tons, Stroudsburg, Pa., addition to manufacturing building for Line Material Co. Bids due Oct. 30.

Reinforcing bar awards this week:

2700 Tons, Chicago, super structure, Prudential Bldg. Bids in.

Reinforcing bar inquiries this week:

104 Tons, Franklin, N. H., round mix pavement and frame overpass, W. G. Watkins & Son, Inc., Amesbury, Mass., and South Hampton, N. H.  
75 Tons, Keokuk, Ia., lock no. 19, to McCarthy Improvement Co., Davenport, Ia.

## Non-Industrial Projects Approved

Materials have been allotted for the construction of some 500 religious, municipal, commercial, and entertainment projects with an estimated cost of about \$100 million.

Allotments were made during the second quarter with about 50 pct of the allocations scheduled for delivery through the fourth quarter. About 40 pct of the materials are scheduled for first half 1953 delivery.

Included in the major categories were 77 retail stores estimated to cost \$16 million; 31 office buildings, \$16 million; 21 warehouses, \$5 million; 12 public lodgings, \$6 million; and 154 churches, at \$29 million.

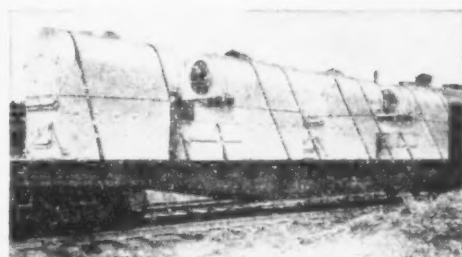


# Acme Steel Strapping Insures S.A. *(Safe Arrival)*

**Cuts costs on packing, loading, shipping, too!**



**AWKWARD SHAPES** are easy to wrap with Acme Steel strapping. Here it quickly fastens irrigation siphons together, 25 to a package, for convenient handling.



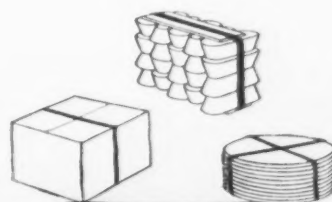
**KEEPS BIG BOILERS** from throwing their weight around. Acme Steel strapping secures massive loads to railroad flat cars. Strapping is fastened quickly and easily into place, keeps heavy shipments from shifting.



**BRACING BARRELS** inside a boxcar, Acme Steel strapping saves weight, bulk, and cost of older bracing methods. Barrels themselves are made with Acme Steel hoops.

It doesn't matter how big an object you want to ship. Or how heavy, or awkward, or breakable. One way or another, Acme Steel strapping can help deliver the goods—safe and sound and sure.

In addition to insuring S.A. (Safe Arrival)—and the satisfaction to the shipper and the receiver that goes with it—Acme Steel strapping makes a big contribution in reducing damage losses and cutting damage claims. It also cuts labor and material costs way down. Would you like specific examples? We'll be glad to cite them for you. Write for them to Acme Steel Products Division, Dept. IA-102.



**ACME  
STEEL**

**ACME STEEL COMPANY**

2825 Archer Avenue, Chicago 8, Illinois

October 30, 1952

45

# Industrial Briefs

**Elected**—Fred L. Plummer, director of engineering, Hammond Iron Works, Warren, Pa., has been elected president of the AMERICAN WELDING SOCIETY for 1952-53.

**Production Underway**—At the new \$5 million Phoenix plant of AIRESEARCH MFG. CO. production is underway on air turbine starters, with initial deliveries to the Navy scheduled this month.

**New Addition**—EMERGENCY STEEL SERVICE CORP., Skokie, Ill., have completed a new warehouse addition which contains 8000 ft and provides additional shipping and receiving docks. Architect was Edward Steinborn.

**Congratulations**—Charles L. Sager observed his 50th anniversary recently with the CROSBY CO. of Buffalo.

**Branch Office**—ALUMINUM IMPORT CORP., U. S. sales distributor for Aluminum Co. of Canada, Ltd., will open a branch sales office in Cleveland.

**Offices Opened**—ARTHUR G. MCKEE & CO., Cleveland, has opened offices of their Canadian subsidiary, Arthur G. McKee & Co. of Canada, Ltd., at 350 Bay Street, Toronto. Ralph A. Westervelt was appointed vice-president to direct the operations of this office.

**May Change Name**—CLEVELAND GRAPHITE BRONZE CO. directors have scheduled a shareholders' meeting for Nov. 18 to vote on changing the firm's name to Clevite Corp. Company officials say recent expansion and production diversification make the old name misleading.

**Open House**—ATLANTIC STEEL CO. will mark the opening of new Warehouse Div. building with an Open House and Trade Show on Oct. 31 and Nov. 1.

**Opening**—CLECO DIV., Reed Roller Bit Co., has opened a new sales office and warehouse in Detroit at 18071 Wyoming Ave., with B. Stoothoff as division manager.

**Imported Ore**—Tennessee Coal & Iron Div., U. S. Steel Co., will handle imported ore at its new iron ore terminal in Mobile, Ala., with a 15-ton capacity unloader being constructed by DRAVO CORP., Pittsburgh.

**Elected**—At the annual meeting of the SERVICE TOOLS INSTITUTE at the Harvard Club, New York, James G. Geddes was elected president for 1953. Mr. Geddes is president of H. K. Porter, Inc.

**Enters Field**—TRIANGLE CONDUIT & CABLE CO., INC., is entering the copper and brass tubing field with construction of a new mill at New Brunswick, N. J. Building was designed and is now being constructed by Wigton-Abbott Corp., Plainfield, N. J.

**Constructing**—LURIA ENGINEERING CO. is constructing a new 3-story, steel-frame office building for the Lock Joint Pipe Co. adjacent to the latter's present office headquarters at 150 Rutledge Ave., East Orange, N. J.



O. K. Pete! From here on in shave at home. I know how razor sharp Clarite Tool Bits are!

COLUMBIA TOOL STEEL COMPANY • CHICAGO HEIGHTS, ILL.

Producers of fine tool steels—High Speed Steels  
Die Steels—Hot Work and Shock Resisting Steels  
Carbon Tool Steels.



*Metal  
Stamping  
Facilities*

by *Lansing*

at your Service for...

**ELECTRICAL  
EQUIPMENT**

**HOUSEHOLD  
APPLIANCES**

**TRANSPORTATION  
EQUIPMENT**

**INDUSTRIAL  
EQUIPMENT**

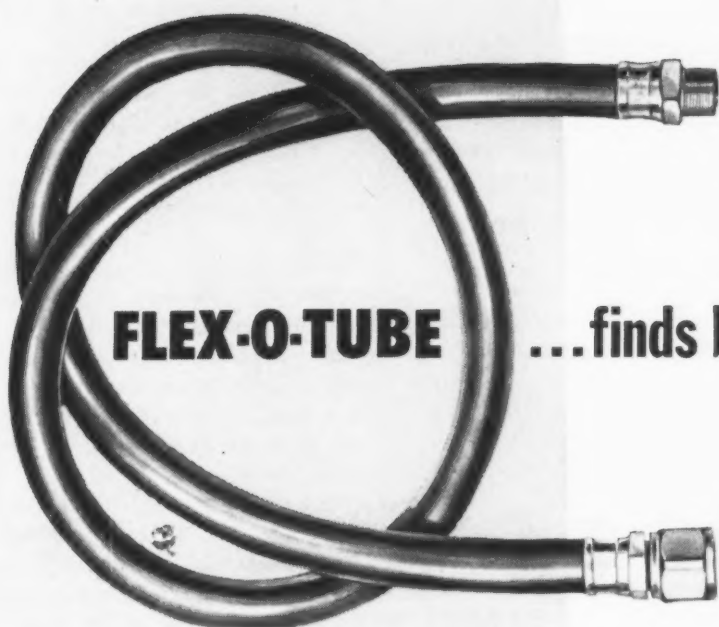
**FARM  
IMPLEMENTS**

*Lansing Stamping Co.*

LANSING 2

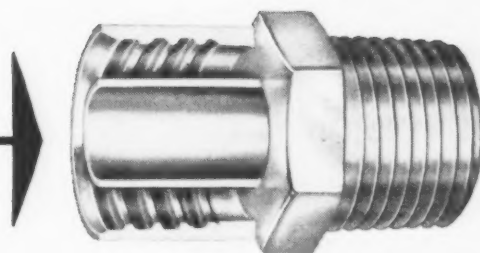
"ESTABLISHED 1914"

MICHIGAN

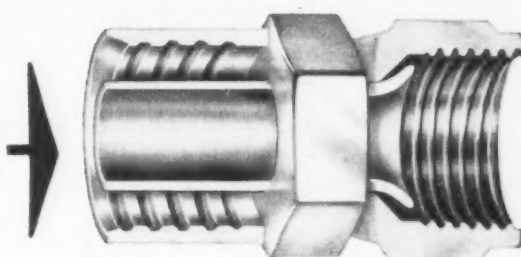


**FLEX-O-TUBE**

**...finds brass makes fine fittings**



Flex-o-Tube Hose, and cross section of machined male fitting.



Cross Section of machined and flared female fitting.

For quick, accurate and economical machining, free-cutting brass rod is preferred by many companies, such as Flex-O-Tube, Division of Meridan Corporation, Detroit, Mich. This company makes hose assemblies and fittings to conduct air-oil-water-gasoline and hydraulic power for the automotive, farm implement, machine tool and aircraft industries. Some of these hoses have a minimum bursting pressure of 20,000 pounds per square inch, which gives an indication of the tightness required, which can be obtained only by strength and accuracy.

Flex-O-Tube has found six points of superiority for brass over other metals, as follows:

1. Brass "flows," or is ductile, so that no cracks result during the crimping operation required to fasten the fittings to the hose.
2. Ductility and strength inherent in brass act to provide a superior seat to fittings designed to control fluid flow. Competitive metals are either too hard or too soft to give positive closing and tend to leak.
3. Where the design of the fitting is intricate, necessitating removal of considerable metal by machining, the automatic screw machines can be run faster with free-cutting brass rod.
4. Brass has a high scrap value, and the scrap sold back to the mill increases brass supplies.
5. The break-even point between brass and other metals is especially favorable to brass in the sizes of rod that Flex-O-Tube buys.
6. Customer preference is for brass, which is universally recognized as a quality metal. Hence brass fittings are more readily sold, and in fact often are specified regardless of size or price differentials.

Included in the Flex-O-Tube operations are machining, flaring, crimping, and annealing to assure the proper ductility for flaring and crimping.

Revere is an important supplier of brass rod to Flex-O-Tube, and has also collaborated with this customer through the Revere Technical Advisory Service.

If you wish information about brass and how one or more of the Revere brasses can add to the economy and saleability of your product, get in touch with the nearest Revere Sales Office. See your telephone directory or write direct.

**REVERE**

**COPPER AND BRASS INCORPORATED**

*Founded by Paul Revere in 1801*  
230 Park Avenue, New York 17, N. Y.

*Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y. Sales Offices in Principal Cities. Distributors Everywhere.*

SEE REVERE'S "MEET THE PRESS" ON NBC TELEVISION EVERY SUNDAY



# The Automotive Assembly Line

## Conversion Is Key to Auto Output

**NPA steel allocations for first quarter 1953 autos insure continuation of conversion . . . Tickets for only 630,000 cars issued . . . Can conversion fill deficit?—By R. D. Raddant.**

As it stands at the moment, conversion steel holds the key to automotive production for the early months of 1953.

Recent steel quotas announced by National Production Authority

Where will the steel come from? Conversion, of course. However, there is always the possibility that NPA's mind may be changed or later explained to show that NPA really didn't mean it at all.

### Automotive Production

(U. S. and Canada Combined)

WEEK ENDING	CARS	TRUCKS	TOTAL
Oct. 25, 1952	113,276*	31,781*	145,057*
Oct. 18, 1952	106,272	31,811	138,083
Oct. 18, 1951	94,609	26,606	121,215
Oct. 11, 1951	94,030	26,780	120,810

\*Estimated

Source: Ward's Reports

assured not only the continuation of conversion into 1953 but expansion and extension of this expensive, inconvenient and sometimes unreliable process.

One of the top automotive steel experts flatly predicted that all available conversion will not be enough. It can't fill the deficit between the minimum number of cars the industry feels it should build and the number authorized by NPA.

**Need Tickets** — This deficit is now expected to be 400,000 cars, the difference between 1,050,000 that the industry is asking and 630,000 that tickets will be issued for. The industry is authorized to build 1,250,000 cars during the first quarter if it can find the steel without tickets.

Because of a strong position in bargaining with the mills plus highly skilled purchasing tactics, the industry will have its tickets used up well before the end of the year. This means no carry-overs.

The recent experience in regard to fourth quarter tickets could happen again.

**Not Enough** — Widely-used as conversion is at the moment, most steel buyers agree that conversion cannot make up the difference between NPA figures and industry's hopes. After all, 400,000 cars would be a shade less than 40 pct of the total quarter output.

Under the automotive industry's present acceleration of production, it is an average guess that 20 pct of automotive steel is conversion steel. Those who should know say that another conversion ton can scarcely be squeezed out of conversion capacity, certainly not double the present.

**Less Mill Space**—As a matter of fact, most believe that available conversion facilities will be fewer, not greater. An example is Inland's openhearth capacity being increased to the point where their widely known conversion availability will be slashed.

The big bottleneck in placing conversion is in slabbing capacity and blooming facilities. Conversion experts believe they can find the rolling facilities if they can get the slabbing done.

**Quick Change**—Veterans of the automotive industry have been amazed this year at the speed in which model changeovers have been accomplished. Downtime has been very short and losses to labor and production have been negligible.

Part of the secret was disclosed by DeSoto where the story of a "dress rehearsal" changeover during the steel strike was related this week. The use of the interval while the plant was closed for lack of steel enabled DeSoto to convert from 1952 to 1953 models in only a fraction of normal time.

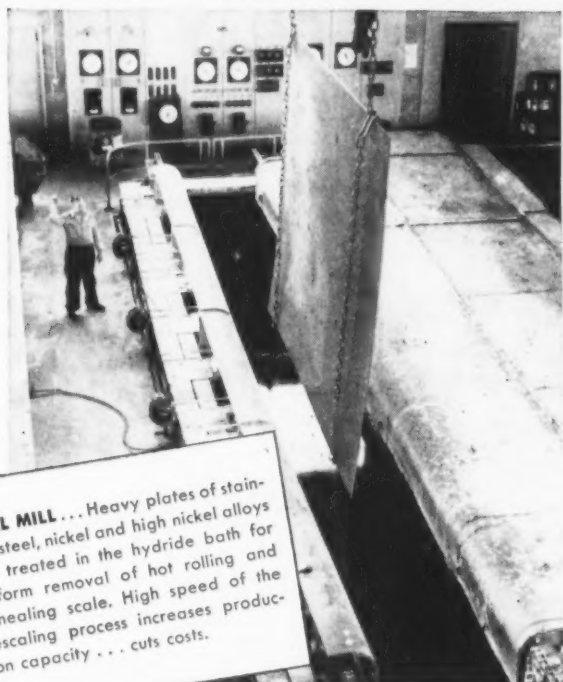
When the steel famine brought DeSoto assembly lines to a standstill, engineers and production men took over and completely converted the plant to 1953 models. When this was accomplished, some pilot production was turned out. When steel was available again, 1952's again were produced, but when the real changeover came, the final conversion was a routine matter.

**All New**—The fast conversion is remarkable in that DeSoto will have an entirely new body which forced replacement or substantial alteration of more than 1200 tools, machines and fixtures.

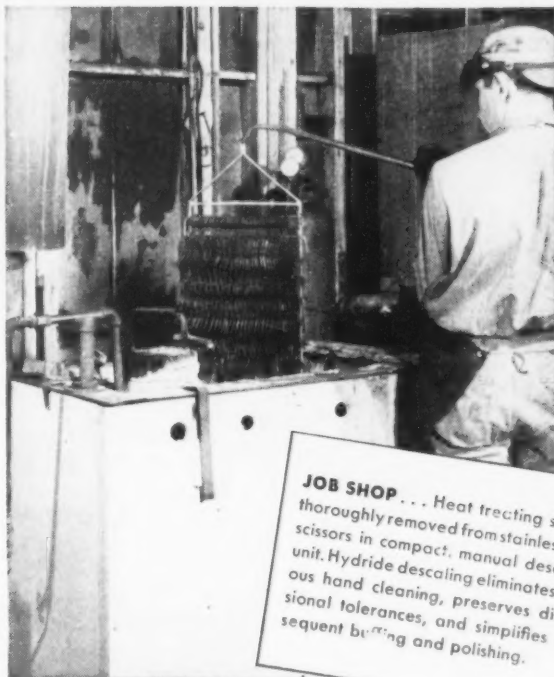
A total of 445 assembly trucks used in the body plant had to be altered for new body contours as did 520 conveyer trunnions. Roof changes required changing 60 conveyer roof panel fixtures.

Some 150 spot welding fixtures were altered as were four giant progressive-type welders. Since as many as 198 separate welds are performed by the progressive welders, converting each to new production was a major job.

**NO SECTION TOO BIG...NO PART TOO SMALL**



**STEEL MILL**... Heavy plates of stainless steel, nickel and high nickel alloys are treated in the hydride bath for uniform removal of hot rolling and annealing scale. High speed of the descaling process increases production capacity... cuts costs.



**JOB SHOP**... Heat treating scale is thoroughly removed from stainless steel scissors in compact, manual descaling unit. Hydride descaling eliminates tedious hand cleaning, preserves dimensional tolerances, and simplifies subsequent buffing and polishing.

## FOR THE DU PONT SODIUM HYDRIDE DESCALING PROCESS

**FROM OUNCES TO TONS!** That's the capacity range of current sodium hydride installations in mills, factories and job shops of all sizes. And with each unit, the same results—speedy, uniform descaling of many different metals at a saving in time and material. Hydride descaling leaves surfaces clean and bright... does not attack base metal. Yet, scale is thoroughly removed from even the most intricate part by the penetrating bath action.

**FOR MORE INFORMATION** about the Du Pont Sodium Hydride Descaling Process, just get in touch with our nearest district or sales office or send the coupon below to: E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

### DISTRICT AND SALES OFFICES:

Baltimore • Boston • Charlotte • Chicago • Cincinnati • Cleveland • Detroit  
Kansas City\* • Los Angeles • New York • Philadelphia • Pittsburgh • San Francisco

\*Baroda & Page, Inc.

### OUTSTANDING ADVANTAGES OF THE SODIUM HYDRIDE PROCESS

- **HIGH-SPEED OPERATION**—Descales in shortest practicable time cycle... can be adapted to manual, conveyORIZED or continuous operation.
- **NO LOSS OF BASE METAL**—Bath action is reducing. Reaction stops when oxygen is removed from scale, eliminates pickling losses, etching and pitting.
- **ECONOMICAL TO OPERATE**—Permits savings in acid and metal... handles large volume of work in small space... is non-electrolytic.
- **HANDLES DIFFERENT METALS**—Alloy steel, stainless steel, nickel, copper, titanium and cobalt bearing alloys can be efficiently descaled—even in the same bath.
- **UNIFORM DESCALING**—On all surfaces without need for special racking procedures.
- **USES LOW-COST EQUIPMENT**—(Carbon Steel Tanks). **NO HYDROGEN EMBRITTLEMENT.**

**DU PONT**  
**Sodium hydride process**  
**for positive descaling**



**150th Anniversary**

BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY

E. I. du Pont de Nemours & Co. (Inc.)  
Electrochemicals Department  
Wilmington 98, Delaware

Please send me more information on the Du Pont Hydride Descaling Process: advantages, applications, equipment used. I am interested in cleaning \_\_\_\_\_ products.

Name \_\_\_\_\_ Position \_\_\_\_\_

Firm \_\_\_\_\_

Street and No. \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

October 30, 1952

# When a high-strength steel is needed

for severe cold-formed shapes like these bumpers

Specify →



and get all of the  
requirements  
of SAE 950



When a material meeting the requirements of the high-strength, corrosion-resisting steels of SAE Specification 950 is used for severe cold-formed shapes, it will pay to investigate N-A-X HIGH-TENSILE steel—the low alloy steel with built-in formability. Its finer grain and higher hardness also result in brighter luster when ground and polished for plated parts.

**GREAT LAKES STEEL CORPORATION**  
N-A-X Alloy Division  
Ecorse, Detroit 29, Mich.

**NATIONAL STEEL CORPORATION**





## RESEARCH: Robot Heart Perfected

**Mechanical heart takes over for 90 min while surgeons do valve job on patient . . . Constructed by GM lab after 3 years of research . . . Authorized by C. E. Wilson as public service.**

Medical history was made in Detroit last week when the first successful use of a "mechanical heart" was reported. The robot heart kept a patient's bloodstream circulating through his body while surgeons operated on the living heart.

This would have no place in an automotive column except for the fact that it was developed as a public service in the General Motors Research Laboratories.

While GM engineers give full credit to Dr. F. D. Dorrill, the heart surgeon who originally conceived the first successful plan for a mechanical heart, medical men are in turn the first to give credit to the research and engineering offered by GM.

**How It Started**—C. E. Wilson, GM president, who incidentally takes an active interest in the American Heart Assn., was first approached with Dr. Dorrill's ideas. He authorized the project in the Research Laboratories Div. under Charles L. McCuen.

The project continued for 3 years with E. V. Rippingille, former assistant to the laboratories general manager, heading the work. Even after his retirement, Mr. Rippingille continued to work on the heart's development.

**Valve Job**—In the operation, the mechanical heart pumped the patient's entire bloodstream for 90 min while the mitral valve of his own heart was being repaired. It was then shut off and the patient's own ticker took over.

While GM is not primarily interested in medical projects, the mechanical heart is not the first development. Another is the oxyhemoglobinograph which records graphically and instantaneously the amount of oxygen in a surgical patient's bloodstream. At least one

other invention for medicine is said to be approaching release.

### Chrysler '53 Models Debut

The parade of entrants in the 1953 automotive derby continued this week with the introduction Oct 29 of the new Chryslers.

Like their smaller brother, the Dodge, all Chrysler models have completely new bodies with longer, lower lines to emphasize the length and width of the car.

Styling changes provide most of the Chrysler revisions with the 180 hp V-8 FirePower engine, full-time power steering, Fluid Torque drive, power brakes and Oriflow shock absorbers all continued in the '53's.

Chrysler is the first car to come



MECHANICAL HEART in action.

on the market with the 12-volt electrical system. It is designed to meet the higher electrical loads imposed by the increasing use of electrically operated equipment. By unofficial count, it is possible to have a car with ten separate electrical motors.

### THE BULL OF THE WOODS

By J. R. Williams



# ASSURE YOUR GEARS A "RIPE OLD AGE"



... with **TEXACO**  
**MEROPA LUBRICANT**

When you use *Texaco Meropa Lubricant* in your enclosed reduction gears, you'll get long-lasting protection that adds immeasurably to gear life. *Texaco Meropa Lubricant* stands up under the toughest conditions.

*Texaco Meropa Lubricant* also rates tops for resistance to oxidation. It does not thicken, does not foam, does not separate in service, storage or centrifuging. And the fact that it protects bearings as well as gear teeth means lower maintenance costs.

For oil film bearings in roll necks, use *Texaco*

*Regal Oil* and watch your maintenance costs come down. This turbine-quality oil is especially designed for heavy duty and has outstanding resistance to oxidation and sludging.

For greater efficiency and lower costs throughout your mill, call in a Texaco Lubrication Engineer. Just contact the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

**TEXACO Meropa Lubricants**  
FOR STEEL MILL GEAR DRIVES

Faithfully yours  
**50**  
for Fifty Years

**TUNE IN:** Tuesday nights on television—the TEXACO STAR THEATER starring MILTON BERLE. See newspaper for time and station.

### Industry Will Feel Draft Impact

**Effects of military service will be far-reaching . . . Army says about 10 million men will be called up in foreseeable future . . . No limit on training program set yet—By G. H. Baker.**

Inevitable effects of upcoming military draft calls upon U. S. home life—and upon industry as a result — are beginning to take shape. Some far-reaching changes, including the creeping transition of the nation's industry to a fairly permanent "wartime" basis, are in the making.

Top Army officials say about 10 million young Americans will embark upon military careers in the foreseeable future. No time limit for this broad training program is set. It may run indefinitely, particularly if military officials are able to win blanket approval of their goals from the new Congress.

It seems reasonable to assume that each new serviceman will have at least two other persons directly or indirectly dependent upon him. This means that about 30 million persons may be headed for changes in their places of abode and in the type of products they buy or use during the next few years.

**High Turnover**—Army's biggest personnel headache these days results from the rapid rate of turnover in its ranks. About 750,000 men, or about half the Army's total strength, will be dropped from service this year because of the completion of enlistment periods. Congress is told that Universal Military Training is the only practical answer to this turnover problem.

Second-best alternative is to stretch out periods of enlistment. Politicians are aware, however, of the unpopularity of this type of stretch-out. As Secretary of the Army Frank Pace puts it: "In this period of half-peace, half-war, some reasonable limit to a soldier's mandatory service is the only fair and democratic way of meeting our defense requirements."

**Uncertain Future**—Immediate future of copper stockpiling is up in the air. National Production Authority is bothered by Munitions Board's failure to decide promptly whether or not it will raise the current stockpiling rate. NPA officials are quietly urging the board to make up its mind so that some clear idea of the copper tonnages available for allocation may become known. Any additional amounts of copper for the stockpile will have to be set aside from the supply against which CMP tickets are written.

NPA says it will have to have an answer from the Pentagon within 2 weeks. Otherwise, the agency fears it may unwittingly be writing "rubber checks" for second-quarter allocations. Munitions Board officials have thus far shown no disposition to come up with an early decision.

**Pushed Out**—"Five-percenters" are having an increasingly tough

time selling their services to business and industry since the Federal Government stepped up its campaign to unsnarl the red tape that usually surrounds government contracts.

General Services Administration—biggest buyer of goods and services outside of the Defense Dept.—says it has made substantial progress in its program to make it easy for business to avoid the percentage operators in selling to Uncle Sam.

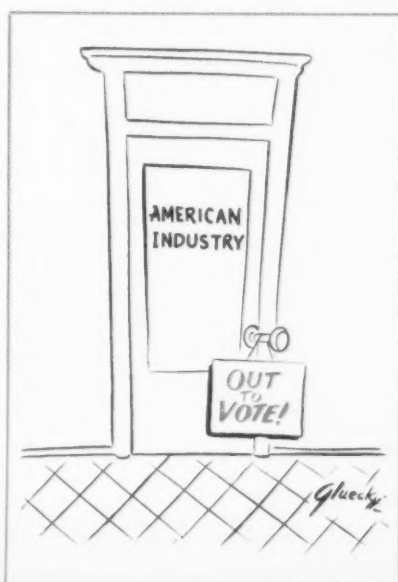
During the past 3 months, about 50 pct more business firms have sought free government advice from GSA's new business service centers in various sections of the country.

**Free Specs**—Increase in the number of direct industry-government contacts is due primarily to GSA's new practice of supplying free specifications for the products it wants to buy.

Up until recently a firm had to send to Washington and buy the specifications necessary for bidding. Many firms found it simpler—and cheaper—to deal exclusively with "five-percenters" or other types of agents.

**They Can Quit**—Employees may end a "union security" agreement before their contract expires, National Labor Relations Board has ruled. Board says in a recent 3-2 opinion that if workers vote to revoke the part of the contract that requires them to be union members, the provisions are to be cancelled immediately.

Majority says it is aware of the "possible unstabilizing effect" of voiding a union-security portion of a contract at mid-term, but points out that Congress had expressed itself in the Taft-Hartley Act as believing that no union-security agreement should ever be imposed upon an unwilling majority. That follows the principles of democracy which also work against union shop.





# DEFENSE: Output Will Rise in '53

**Limited boost not a change from long range mobilization planning . . . More defense contracts to be placed next year . . . Controls to stay . . . Rearmament peak not seen in '53.**

The pace of defense production will get another upward nudge next year, say high level mobilization officials in Washington. This firm pronouncement clarifies the muddle of conflicting predictions as to when the nation would reach its defense output peak.

The limited acceleration is not a deviation from long-term mobilization planning. Breakneck production warranted by a more demanding crisis is not yet seen.

Defense contracts and subcontracts are to be let in greater number next year. Inflation—particularly that resulting from higher wages in steel, copper, and aluminum—is to swell the dollar amounts of contracts. More federal funds are to be expended in payment for the goods and services the government will need in increased volume to match the faster-rolling defense program. Controls over materials—use, inventories, and distribution—will continue. Minor relaxations of some “use” controls are in the making, but on the whole the fabric of regulation imposed by Washington will be reinforced and, to some degree, extended.

**New Thinking**—Top-level mobilization officials are now reversing estimates they prepared early this year as to when the long-range rearmament program would be over the hump. They now state flatly that the peak will not be reached in 1953. It may not be at as high a level next year as originally planned, but “slippage” in expansion of facilities will tend to fill in any slight recession that might occur. Here is the basis of their thinking:

1. Backlog of manufacturing orders—especially heavy durables—is increasing, with considerable lead time for many items.

2. Present appropriations for de-

fense have not been fully committed, and more will soon be forthcoming.

3. Deliveries of munitions are only recently reaching speed. Recent progress is sharply upward.

4. Demand for housing is unsatisfied. Expectation is that at least 1 million dwelling units per year, together with their furnishings, will be needed for several years.

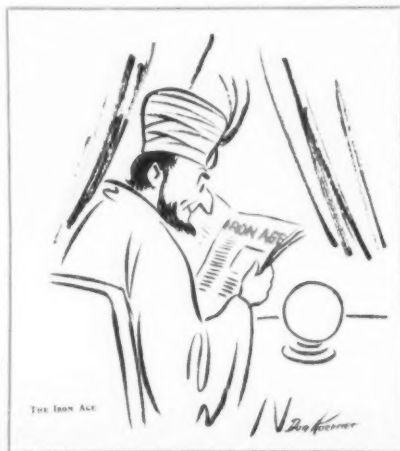
5. Commercial structures and other civilian construction has been deferred.

6. Employment and income will continue to have strong support which, unless prices get out of hand, should absorb all civilian goods that can receive raw materials.

7. The necessary expansion of manufacturing plant capacity was stated by Office of Defense Mobilization Chief Fowler as only about half attained by June, 1952. Both the incoming capacity and its consumption of raw materials will add heavily to requirements.

## Titanium Sponge Target Lifted

Expansion goal for titanium sponge has been revised upward by Defense Production Administration. Target is now 22,000 short



tons annually by 1955. This is a hike of 12,000 tons over the goal set on June 20, 1952.

Titanium sponge production in 1951 was about 500 tons, and the increase represents 21,500 tons in 4 years. Within the next 6 months the new goal will be reviewed.

## GAS:

**New underground storage projects reaching 5.9 billion bbl mark.**

Underground storage of liquefied petroleum gas probably will reach the 5.9-million-bbl mark by the end of next year. More than 2 million bbl of lp-gas are now contained in steel-less underground cavities and abandoned mines.

Since mid-1950, when underground facilities were first built for lp-gas storage, 26 producing companies and lp-gas distributors have planned or completed a total of 77 projects with a total capacity of 5,862,500 bbls.

Underground cavities for storage of lp-gas are usually constructed by hydraulic mining in salt domes or layers or by vertical or horizontal shaft mining in sandstone, limestone, or similar formations. Such storage is much cheaper than above-ground tanks, and requires use of little steel or other metals.

Existing and projected underground storage projects follow:

State	No. of Projects	Capacity (bbl)	
		In Use	Ultimate
Illinois	3		500,000
Indiana	1		50,000
Kansas	2	25,000	75,000
Louisiana	7	415,000	625,000
Michigan	2	100,000	200,000
Mississippi	5	200,000	500,000
Missouri	1	25,000	25,000
New Mexico	9	265,000	515,000
New York	1		25,000
Oklahoma	1		50,000
Texas	43	1,056,500	3,127,500
Wisconsin	2		170,000
Total	77	2,086,500	5,862,500

## Coal Safety Pacts with States

U. S. Bureau of Mines in negotiating new federal-state coal mining safety rules with representatives of mining states. Goal is to conclude “cooperative agreements” with state officials under the new federal-state inspection.

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# Power Checkmate

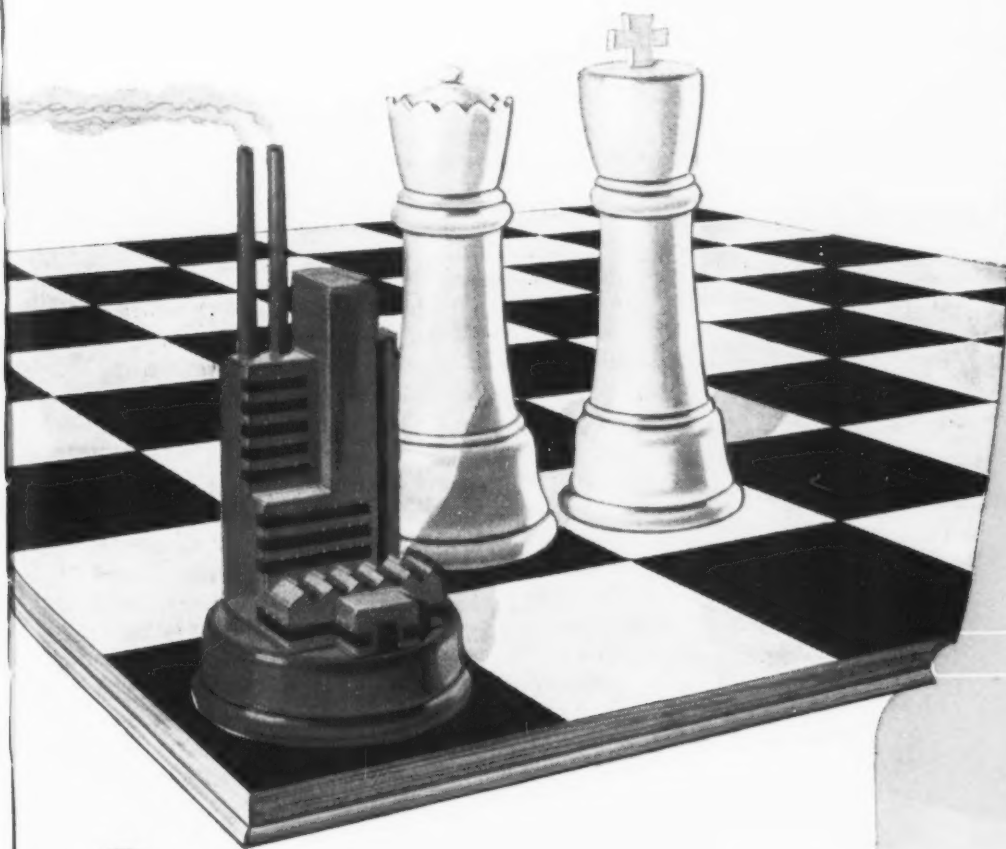
Poor power factor, adverse current characteristics, surge loads . . . any one of these conditions can put your plant in a power checkmate. You are then paying a penalty that can mean the difference between profit and loss.

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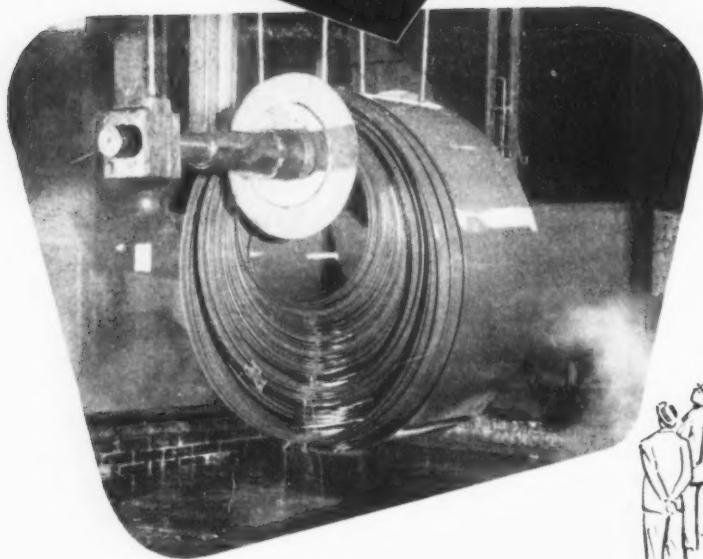
## Put Your Power Costs and Performance in Order

- 1 **Handle Peak Demand** . . . reduce peak demand values for lower purchased power rates.
- 2 **Power Factor** . . . in-plant power generator can eliminate power factor penalties.
- 3 **Emergency Power** . . . insurance against lost production and damage resulting from line failures.
- 4 **Handle Surge Loads** . . . that may now be affecting current characteristics of entire plant.
- 5 **Plant Expansion** . . . need not be restricted due to lack—or expense—of ample power.
- 6 **Useful Heat** . . . lube oil, water and exhaust heat can be turned from waste to profit.
- 7 **Chemical Value** . . . exhaust gases are high in free nitrogen—available for economical fixation of nitrates, ammonia, etc.
- 8 **Insurance Advantage** . . . of diesel over gasoline engine, for example, will soon pay for installation.
- 9 **No Weather Worries** . . . ice, snow, sleet, wind storms can't stop plant operations.
- 10 **Handle Increasing Load** . . . in-plant power economically adds to current capacity as loads increase.
- 11 **Fuel Economy** . . . use diesel oil, natural gas or sewage gas for added economy.
- 12 **Remote Locations** . . . distance from transmission lines needn't curtail plant expansion.
- 13 **More Compact Power** . . . Fairbanks-Morse engines give you more power per foot of floor space, more power on present foundation.
- 14 **Minimum Attendance** . . . Fairbanks-Morse in-plant generating sets require far less supervision or maintenance.
- 15 **Save Cost** . . . of running in new line where present transformers and power lines are already loaded.



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Mechanical Coil Pickler  
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**You Get  
Uniform Pickling  
Like This**



The new Weldco Mechanical Coil Pickler was designed especially for semi-continuous pickling in medium and low-tonnage mills. Economical and space-saving, it cuts manpower and maintenance expense to the minimum, while giving you thorough, uniform pickling in less time. For example—note the completely cleaned coil at the left, after processing in our McKees Rocks, Pa., installation. This 14-gauge steel was pickled in 9 minutes in a 12-14% sulphuric acid solution at 180°-200° F.

The Weldco unit assures efficient, inexpensive, individual coil pickling. Its flexibility permits you to pickle several different widths at the same time—eliminates down-time—resetting for size—hairpinning!

The Weldco Mechanical Coil Pickler is available in any capacity up to 25,000 tons per month, and with a small investment in handling equipment, can be used to pickle sheets, plates and bars. (For successful pickling of strip, a satisfactory scale breaker and loose coiler are required.) It will pay you to get complete details on this new, low-cost Weldco Pickler. Contact us for further information, and for complete engineering service on your entire pickling line.



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### Steel Output Hits Postwar High

**Post-strike demand pushed western steel production to the record-breaking figure of 112.8 pct of capacity last week . . . But coal strike is sobering thought—By T. M. Rohan.**

Western steel firms got some good and bad breaks last week. Heavy post-strike demand and good fortune of operators boosted steel production to its highest post war figure when 112.8 pct of rated capacity was turned out. But the coal strike was a sobering influence until fears eased.

Major firms responsible for the record high production were U. S. Steel's three plants at Geneva, Utah, and Pittsburg and Torrance, Calif., and Colorado Fuel and Iron Works at Pueblo, Colo. Although actual production was recordbreaking, ratio to rated capacity is somewhat exaggerated since ratings have not been officially raised since the first of the year.

Actual capacity at U. S. Steel, for instance, includes openhearth furnaces now being leased from the government. And new handling equipment at C. F. & I. has speeded up actual production. A new all-time record pig iron production was set there a few weeks ago.

On the debit side, U. S. Steel and Kaiser's Utah coal miners fell in with the CIO and didn't come back to work after the traditional 3-day deer hunting season holiday. Both producers expect no interruption in production and have several weeks' supply of coking coal on hand. Pig iron stocks at both firms are also adequate.

**More Guns**—The West's first gunmakers since World War II are tooling up again. Bee Gee Mfg. Co. of Gilroy, Calif., will start production in July on 76-mm cannons for a new army tank. Yuba Mfg. Co. of San Francisco is expand-

ing its nearby Benecia plant to fill an \$8-million contract announced some months ago for 155-mm howitzers which it produced in World War II.

Bee Gee, which normally makes hydraulically-operated earthmoving equipment, is building a new 160 x 280 ft building which alone



**GOING UP:** Over 1200 tons of structural steel from Bethlehem Pacific Coast Steel Corp.'s Alameda Works is being used in this new California State Printing Plant building. Located in Sacramento, the new plant will feature 1-story layout, have 234,000 sq ft of floor space.

will cost more than the revealed value of the contract "in excess of \$250,000." Two-thirds of the machine tools are on order from manufacturers and the remainder will come from government pools.

Yuba Mfg. Co., which normally makes mining equipment, was given its large howitzer contract on the basis of its World War II production record. Current schedules will take 3 to 4 years to fill.

**No Power Cut**—Heavy fog and a light rain last week in the Northwest, first since Sept. 12, helped set back power rationing plans until early November at least. A power conference in Tacoma after

checking water levels in area dams decided they could hold off on rationing 8000 kw to industrial consumers in Washington, Oregon and Idaho, defense projects excepted. Commercial and domestic consumers will be asked to voluntarily curtail consumption but if the normal winter load is unabated, enforcement will result.

In California, Pacific Gas and Electric Co. hired a rainmaker to "cloudseed" over some watersheds to bolster low water reserves. North American Weather Consultants of Pasadena has moved in ground-situated smoke generators

which burn a silver iodide solution and discharge it into the air.

**Raising the Roof**—Pre-assembly methods in building construction bring new problems. Something of a record was set in Los Angeles last week when a 500-ton steel-reinforced concrete slab complete with plumbing and electrical installations was lifted to form the roof of a temple.

The Vagtborg Lift-Slab Corp. used a dozen 50-ton capacity hydraulic jacks mounted on steel girders to raise the 7000-sq-ft slab 3 in. at a time. Lifting is regulated by an operator with intricate control equipment.

### Industrial Expansion Forges Ahead

**New plants, completed or planned, total over \$1 billion . . . Foreign, U. S., home sources furnish backing . . . Ottawa to cut direct financing but give other aid—By F. Sanderson.**

Canada's industrial expansion continues to roll steadily forward. Plants newly completed, being built or on the drawing boards now total well above \$1 billion.

A number of the new plants were financed by the government, but many are the result of private financing. Canadian, British, U. S. and European groups are all investing in Dominion industry. Ottawa sources told THE IRON AGE last week that government financing is to be stopped but other forms of assistance, such as tax write-offs, will be instituted.

Several of the larger new plants are earmarked for defense items, but many others will produce consumer goods to eventually cut imports.

**Frigidaire Opening**—Last week General Motors Corp. President Charles E. Wilson officially opened the new \$11-million plant of Frigidaire Products of Canada Ltd. in Scarborough, a suburb of Toronto. GM has been expanding in Canada ever since World War II, and recently announced a further outlay of some \$40 million.

The Frigidaire plant covers 12 acres, and contains one of Canada's most modern pickling departments. Other features include a \$1-million porcelain finish department, 4½ miles of conveyers and a 400-ton forming press.

**Interest in Labrador**—The campaign undertaken by Premier Smallwood of Newfoundland for the development of the natural resources of Labrador is beginning to show results. Six corporations which specialize in banking, mining or finance have completed talks with Mr. Smallwood. During dis-

cussions he offered the group large concessions (outside those already granted to other interests) if it was willing to set up a company and invest up to about \$5 million for investigation and exploration.

The group, assembled by the Rothschild banking house, and including Frobisher Ltd., Rio Tinto, Anglo-American Corp. of South Africa, Anglo-Newfoundland Development Co., Newfoundland Pulp & Paper Mills and English Electric Co. is now reporting back to their individual heads. It is expected that a decision, one way or another, will be reached within the next 2 months.

**Price Changes** — Consolidated Mining & Smelting Co. of Canada has cut lead prices 1¢ per lb., bringing the current quotation to 12½¢. At the same time Smelters increased its zinc price by 10¢ per 100 lb to 13.1¢ per lb. Copper is unchanged at 29½¢ per lb.



Canadian pig iron prices have been advanced \$2.50 per gross ton with the prevailing prices as follows: Base grade, \$57.00; foundry iron (2.25 to 2.75 silicon) \$57.00; malleable iron, \$58.00. For each 0.25 increase in silicon price advances 50¢ per ton.

Merchant pig iron demand is slowing down and blast furnace operators now report no shortages. Melters are showing less interest in the market than they were a few months ago and some have cut buying orders rather sharply in recent weeks. Despite slowing down in merchant iron demand, pig iron production is being maintained at a record level and output for the current year shows signs of topping all previous highs.

**Dolomite** — Steetley of Canada Ltd., a new company and subsidiary of Steetley Co., Ltd., of Work-sop, England, plans construction of a \$2-million rotary kiln plant at Dundas, Ont. It will produce a type of burned dolomite not at present manufactured in Canada.

Chief market for the dolomite refractories will be the Canadian steel industry, which now buys dolomite refractories from the U. S. The new plant is scheduled to come into operation in 1954.

The British Treasury has authorized investment by the company of \$1 million; a further \$1.5 million will be raised in Canada to cover the \$2.5 million cost.

**On Schedule**—The Waneta power plant under construction for Consolidated Mining and Smelting Co. on the Pend-d'Oreille River south of Trail, B. C., is making good progress. Initial production is scheduled for early in 1954. First work on the \$30 million project started in the spring of 1951.

A special feature of the Waneta plant is the big power generators which have been ordered. They will be the most powerful Francis type units ever to be built in Canada.

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## HIGH STRENGTH STEEL

**Helps Make Friends for Penn Body Division  
of Hockensmith Corporation**

# J & L STEEL



Rock from Penn-Lincoln Parkway job drops into Robinson Company truck. J&L OtiscoLOY body members and J&L heat-treated Jolley plate bed floor assure long truck body service life.

### **E. F. Robinson Co. Reports OtiscoLOY Truck Bodies Increased Payloads, Gave Longer Service Life with Lower Maintenance Costs**

Mr. E. F. Robinson, President of the E. F. Robinson Company, Pittsburgh, Pa., reports extra-long service life—maximum payloads from 15 dump trucks built with bodies and supporting members of J&L OtiscoLOY high-strength steel.

Fabricated by the Penn Body Division of the 75-year-old Hockensmith Corporation, and employed by Robinson in the construction of Pittsburgh's new Penn-Lincoln Parkway, the truck bodies have already stood up under 2½ years of punishing service.

In addition, J&L OtiscoLOY's great strength permitted Penn Body to employ lighter sections in the truck construction—deadweight was cut and Robinson could haul bigger pay-

loads inside the legal weight limits.

The result—Mr. Robinson will specify J&L OtiscoLOY in any new truck body orders placed with Penn Body.

If you're operating or building equipment where deadweight cuts into payloads, and where impact, abrasion or corrosion limit service life, you'll find J&L OtiscoLOY can help you, too. Here's why—

Compared to mild steel, OtiscoLOY has 4 to 6 times greater resistance to atmospheric corrosion—greater resistance to fatigue and abrasion. Finally, OtiscoLOY can be welded by any of the standard methods and can be readily cold formed.

Why not take a tip from other up-to-date operators? Send for a free copy of our booklet—"J&L OtiscoLOY—the Transportation Steel." Better still, get in touch with the J&L representative nearest you today.

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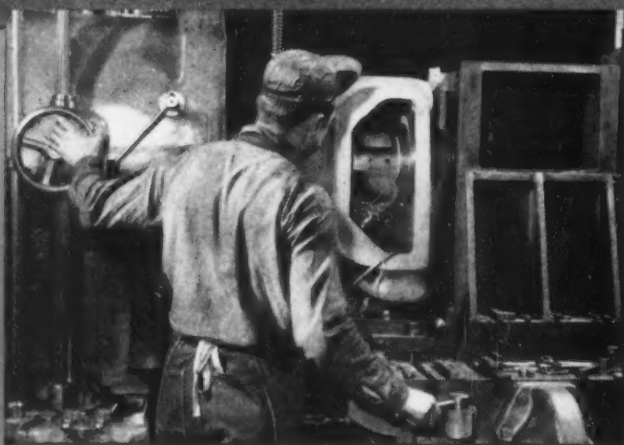
## **JONES & LAUGHLIN STEEL CORPORATION**

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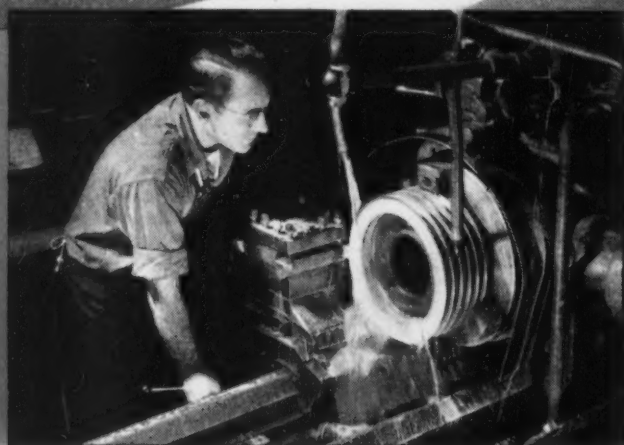


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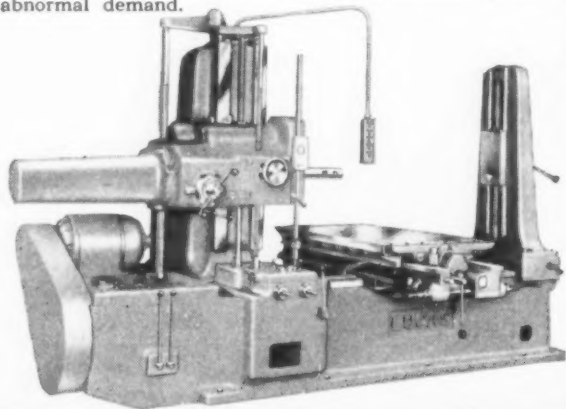


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We still have to keep many a loyal customer waiting, because our output like that of all other defense machine suppliers has been governed by regulations plus an abnormal demand.



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LUCAS MACHINE DIVISION, THE NEW BRITAIN MACHINE CO.  
CLEVELAND 8, OHIO

## Machine Tool High Spots

### Over the Backlog—A Buyer's Market

**Tool builders set for competitive market . . . Some ready new models as backlogs drop . . . Eye replacement market . . . Trouble with Air Force contracts—By E. C. Beaufet.**

As the gap between unfilled orders and shipments of machine tools narrows, builders are girding themselves for a more competitive market during the coming year. Overall industry backlogs are now around 12 months—a year ago the backlog level was 23 months. A few sources predict competition will be in full bloom by mid 1953.

For some, particularly smaller firms building simple tools, the competitive stage is already here. However, backlogs on some types of equipment still exceed 18 months. Longest delays are for lathes, milling machines, boring machines and grinders, in that order.

**New Models**—Some builders are designing new and improved models which they plan to introduce when competition gets sharper. But some makers of long lead time equipment see no need to bring out new models as long as their backlogs are extended by defense orders.

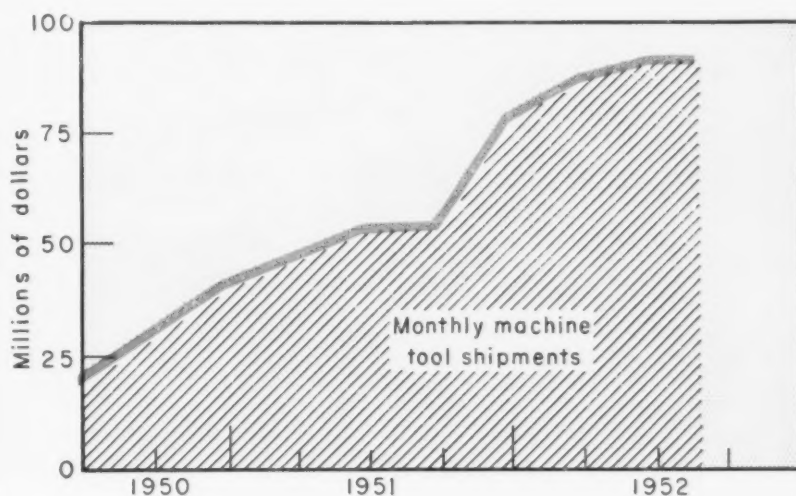
The cost of bringing out new models is becoming increasingly greater, some builders say. And with labor and material costs expected to rise, builders will be forced to bring out new models at higher prices. To justify the higher prices, manufacturers will have to convince buyers that they will reap greater returns from the new machine tools. This will cause greater emphasis on design and construction of more fully automatic equipment.

**Replacement Market**—Barring an all-out war, the best market for the next 10 years will be in replacement. With the right ap-

proach, some think the industry may be facing one of the best selling periods in its history. At the start of the conflict in Korea it is estimated 1.8 million machine tools were in operation in this country. Of these, about 95 pct

changes requested by the user. As a result, these changes are channeled back and forth among the Air Force, prime and subcontractors and builders, all of which takes considerable time.

Defense orders for some general purpose tools are still being placed in fairly good quantities, according to some company officials. Although not coming in at previous high rates, they are still sufficient to prevent acceptance of non-rated orders from some customers.



were ten or more years old, or at least ten years old in design.

As a result, many manufacturers have a golden opportunity to sell machine tools on a replacement basis. To take complete advantage of this market, however, there will have to be greater emphasis on sales training and selling techniques.

**Air Force Problems** — Companies building machine tools under Air Force contracts, claim it is more difficult to fill these orders than contracts from the other services. Main reason for delays they claim, is Air Force insistence on approval of design

Although some of these tools are not on the critical list, civilian buyers are unable to place orders for them due to preference given rated orders. To overcome this, some builders advise their customers to apply for a rating.

However, in some cases when applications are made for ratings they are turned down because the machine tool is not on the critical list. Some question the advisability of allowing rated orders for machine tools not on the critical list to wholly displace civilian orders. They believe a more equitable arrangement can be worked out without hurting the defense program.

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drive attachments for sanding metal and wood; grinding down welds and casting ridges; cleaning castings, structural steel, tanks, boilers, vats, sheet metal and soldered joints. 7" and 9" disc diams.

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prepare surfaces for welding; smooth welds, snag and grind castings; remove rust, scale, old paint; cut off old rivets, studs, bolts; grind, clean and buff frames, cabinets, etc. 5" and 6" wheel diams.

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**N**O MATTER how big or bulky your abrasive jobs, you'll cut costs and speed up work when you switch from hand methods to Black & Decker power! B&D Sanders drive abrasive discs, saucer grinding wheels, "Whirlwind" wire cup brushes, gouging and planing heads. B&D Portable Grinders drive grinding wheels, "Whirlwind" wire wheel brushes, cotton buffing wheels. And *both* give you:

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## Welding

A new 112-p. catalog contains a complete listing of Weldaloy Products equipment and also has many useful welding, engineering, mechanical, metallurgical and physical data tables and charts. Included among the products listed are standard and special welding electrodes, welding wheels, water-cooled holders, dies, bar stock, alloys, castings and forgings. *Weldaloy Products Co.*

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## Steel

Available from Latrobe Steel Co. is a specification sheet covering Electrite HV-6 High Speed Steel. HV-6 is a high-vanadium, high-carbon molybdenum steel with superior abrasion resistance. It is best adapted to tools requiring maximum cutting ability such as those used in machining heat-treated sections, castings and other hard materials. *Latrobe Steel Co.*

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## Set screws

A new 20-p. combination catalog and reference book on set screws has been published. Shown and described in the catalog are various types of standard and self-locking set screws, along with data on dimensions, prices, heads, points and materials. There are also tables on thread standards, standard fit definitions and other technical data. *Set Screw & Mfg. Co.*

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Continued

### Plant location

Choosing a plant location is always a knotty problem, but a method of doing it as practically as possible is outlined in a new publication entitled, *Factors Influencing Industrial Plant Location*. The brochure is a compilation of 64 basic questions that management must answer and evaluate in order to select the best site for a particular plant. *Walter Kilde Constructors, Inc.*

For free copy circle No. 6 on postcard.

### Rolls

Rolls for all cold processing operations of the metalworking industry are covered in a new catalog. The publication is well illustrated and is one of the most complete of its kind. *Tool Steel Gear & Pinion Co.*

For free copy circle No. 7 on postcard.

### Valves

Fairbanks Co.'s line of iron valves is listed in a new specification sheet. In addition to specifications, the leaflet also lists valves that have been approved by Underwriters' Laboratories for fire line installations and gate valves that conform to specifications of American Water Works Assn. *Fairbanks Co.*

For free copy circle No. 8 on postcard.

### Hose, tubing

American Brass Co.'s seamless and strip wound hose and tubing is described in a new quick-reference pamphlet. The publication points out the wide range of available alloys and sizes, suggests applications, and furnishes information on hose and fittings. *American Brass Co., American Metal Hose Branch.*

For free copy circle No. 9 on postcard.

### Seamless tubing

Method of selecting the right kind of seamless tubing as the basis for a particular product is outlined in a new circular. The folder helps tubing users choose between not finished, cold drawn and hot-rolled seamless tubing for specific needs. Information is given on the differences in methods of production, surface finish, tolerances and costs of tubing finished by the three processes. *Tubular Products Div., Babcock & Wilcox Co.*

For free copy circle No. 10 on postcard.

### Drills

An informative drill catalog has just been released by Ace Drill Corp. In addition to listing a complete line of standard drills, the publication also contains information on many items not usually carried as stock items, such as Type L Drills for plastics, 12-in. Longboy Drills, drill blanks, centerless ground reamers, solid carbide drills and "Hi-Brinell" drills for hardened steel. *Ace Drill Corp.*

For free copy circle No. 11 on postcard.

### Lathes, presses

Covered in a new catalog are South Bend lathes, shapers and drill presses. Among the units described is a new pedestal-type tool grinder. Also illustrated and described is the company's complete line of attachments, chucks, tools and accessories. *South Bend Lathe Works.*

For free copy circle No. 12 on postcard.

### Arcwelding electrodes

General Electric has issued a new pocket-sized booklet describing the application, chemical analysis and mechanical properties of GE welding electrodes. The booklet includes an electrode trouble-shooting chart, a chart which specifies the number of electrodes per lb and an explanation of the significance of AWS nomenclature. *General Electric.*

For free copy circle No. 13 on postcard.

Turn Page

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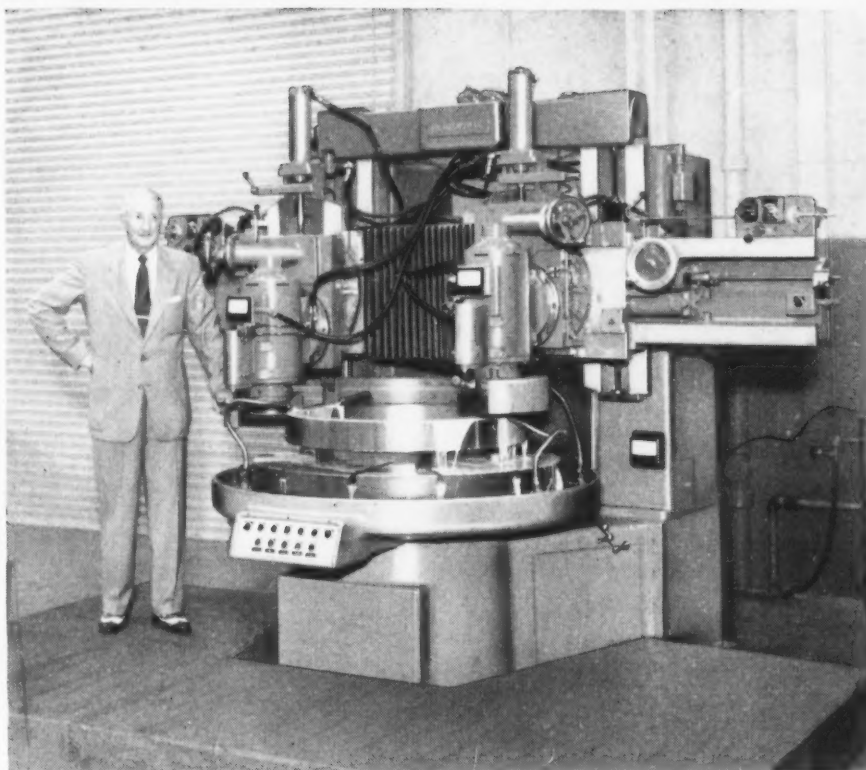
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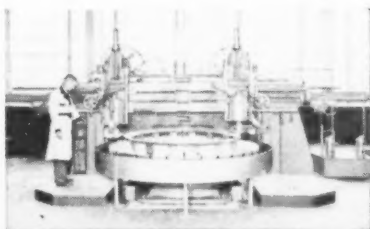
1800 Series Frauenthal Multiple-Head Super-Precision Cylindrical Grinder

## What's Ahead in GRINDING? Frauenthal TOP PRECISION!

With Frauenthal Grinders you can grind big diameters, up to 140 inches, to the extremely close tolerance of .000200" (200/millionths of an inch) in concentricity, parallelism and roundness. Uniformity of precision is assured. Investigate Frauenthal Multiple-Head Super-Precision Cylindrical Grinders.

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TABLE SIZES	30"	36"	42"	48"	60"	72"	100"	120"	130"	140"
MAXIMUM SWING	56"	56"	56"	56"	72"	88"	120"	130"	140"	150"



◀ 2200 Series Frauenthal Grinder

# Frauenthal Division

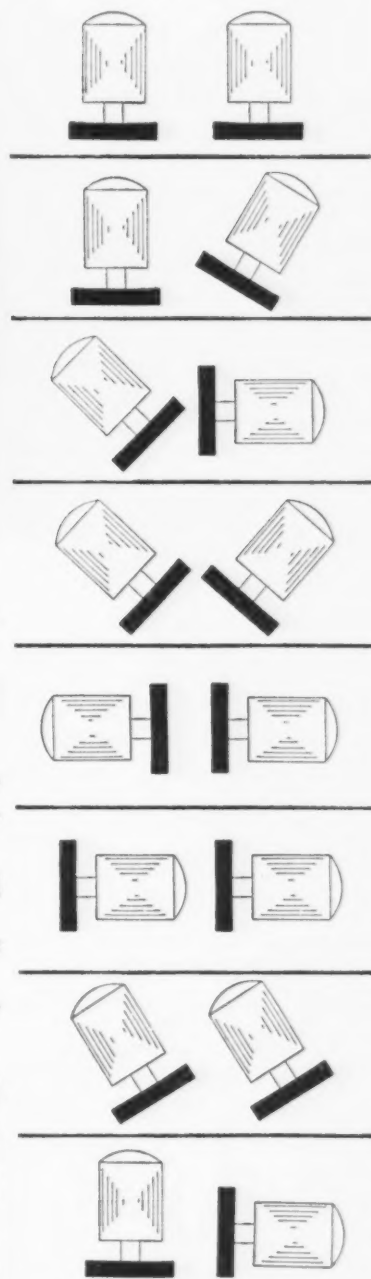
THE KAYDON ENGINEERING CORP.

MUSKEGON, MICHIGAN

★ GRIND OUTSIDE • INSIDE • and FACES SIMULTANEOUSLY ★

### MANY COMBINATION SETTINGS for simultaneous grinding with Frauenthal Grinders

The diagrams below show a few of the many combination settings of Grinding-Spindle positions, suggesting the great versatility of these unique grinders:



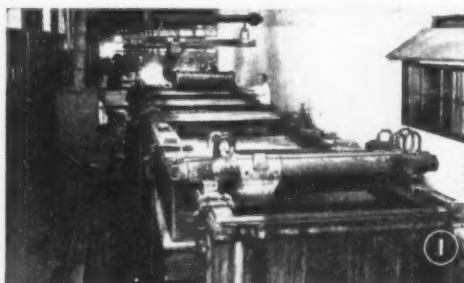
Ask for Bulletin



# Technical Service Data Sheet

Subject: EFFICIENT PICKLING

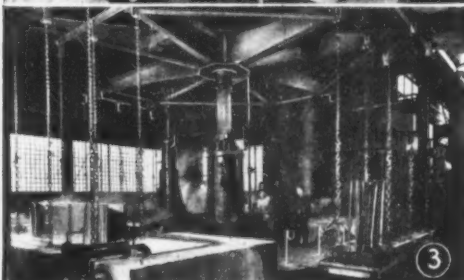
WITH RODINE®



1. Rod and wire are pickled clean with "Rodine" without wasting either acid or metal. Breakage in drawing due to acid brittleness is minimized.



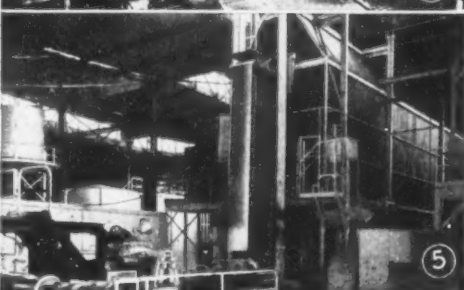
2. "Rodine" protects the exterior of tubes while completely descaling the interior and minimizes breakage in drawing due to acid brittleness.



3. "Rodine" makes possible the batch pickling of sheets over a wide range of acid concentration and temperature.



4. Whether sheet steel is pickled continuously or in batches, "Rodine" improves the surface and prevents "pickle burning" in prolonged pickling.



5. The absence of pitting and the smoother surface obtained with "Rodine" saves expensive coating metal in electrolytic tinning and galvanizing.



WRITE FOR DESCRIPTIVE FOLDER ON "RODINE" AND INFORMATION ON YOUR OWN PICKLING PROBLEM.



## Free Publications

Continued

### Cranes

One of the modern trends in industry is the elimination of operator fatigue through equipment that can be handled with minimum physical exertion. The Wagner powered hydraulic braking system, described in a new bulletin, fits in with this trend by taking the leg work out of controlling bridge motion of overhead traveling cranes. With this system, an operator can bring the largest crane to a smooth stop without physical effort — the powered unit provides all the muscle. The powered units can be added to Wagner hydraulic crane-bridge braking systems now in use. *Wagner Electric Corp.*

For free copy circle No. 14 on postcard, p. 63.

### Metal cleaning

The ways in which airless abrasive blast cleaning equipment can speed production in foundries with small output are outlined in a new bulletin. Among the machines described which are particularly suited to small foundries are the Wheelabrator Tumblast and Swing Table. According to case histories presented in the bulletin one foundry cut cleaning costs 66 pct with the Swing Table and another reduced cleaning costs 67 pct with the Tumblast. *American Wheelabrator & Equipment Corp.*

For free copy circle No. 15 on postcard, p. 63.

### Materials handling

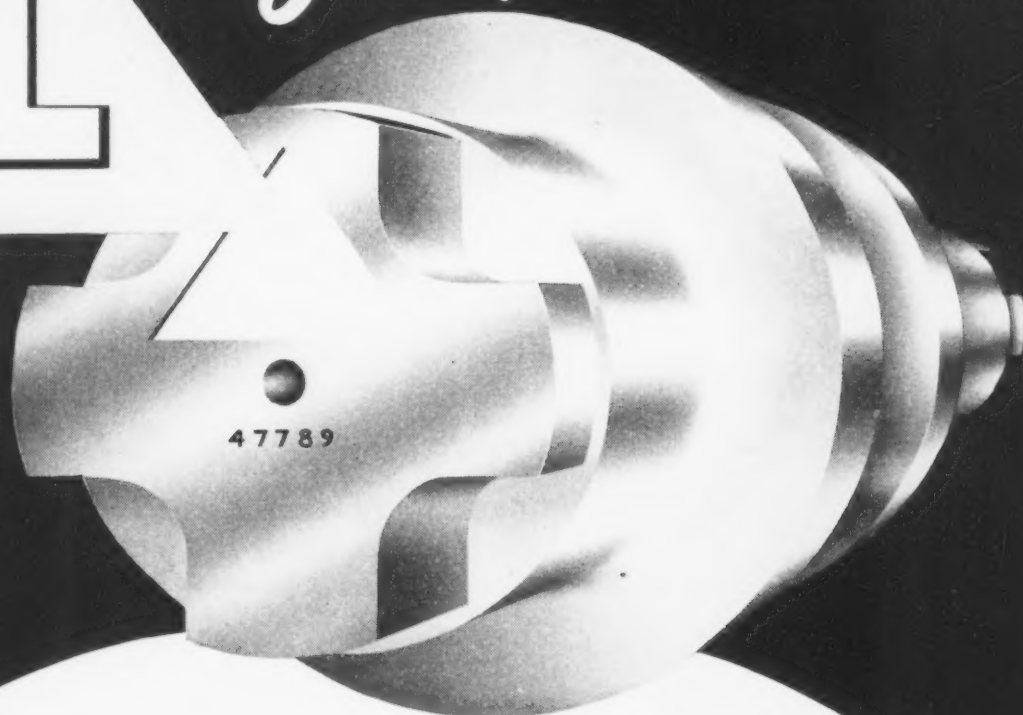
Almost any type of wheeled materials handling unit can be found in the new 44-p. catalog available from Mercury Mfg. Co. This reference book includes the company's entire line of current model tractors, trailers, fork lift trucks, platform lift trucks and load carrying trucks. The catalog is divided into three major categories: Trackless train system, fork truck pallet system and the lift truck skid system. Each of these divisions is preceded by an analysis of the applications and merits of each handling system. *Mercury Mfg. Co.*

For free copy circle No. 16 on postcard, p. 63.

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LEWIS PLAIN CHILLED IRON ROLLS · LEWIS MOLYBDENUM CHILLED IRON ROLLS  
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ROLLS · LEWIS CLIMAX and AJAX ROLLS · LEWIS SPECIAL TUBE MILL ROLL

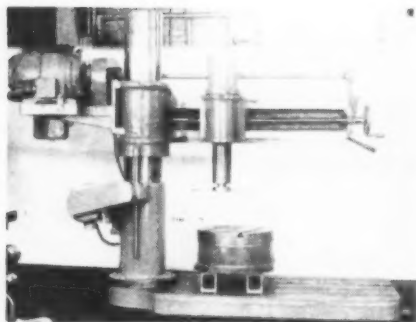
*may we have the opportunity of studying your requirements  
and submitting our recommendations*

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ROLLS AND ROLLING MILL EQUIPMENT  
FOR THE IRON, STEEL AND  
NON-FERROUS  
INDUSTRIES

LEWIS FOUNDRY AND MACHINE DIVISION OF BLAW-KNOX CO., PITTSBURGH, PA.

# NEW equipment

New and improved production ideas, equipment, services and methods described here offer production economies . . . fill in and mail postcard on page 63 or 64.

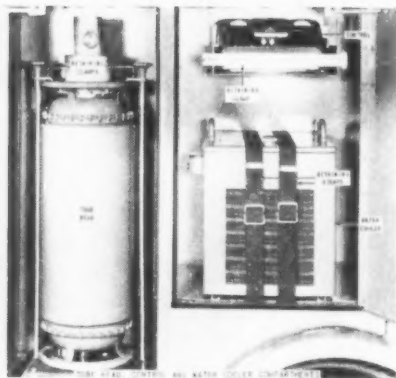


## Gate and risers removed in one operation

A radial-type gate and riser cut-off machine for all types of nonferrous castings is said to perform in one simple operation complete gate and riser removal. It eliminates all hand labor operations of chipping, bandsawing and grinding, and cuts are said to be so clean and accurate only a minimum of ma-

chining by the customer is required. Cutter carriage moves laterally on a 6-ft swinging arm which is counter balanced by 15 hp motor on 10-in. supporting column. Cutter arm rotates in 360° arc, will cut to a 55-in. radius. *Acme Saw & Mfg. Co.*

For more data circle No. 17 on postcard, p. 63.

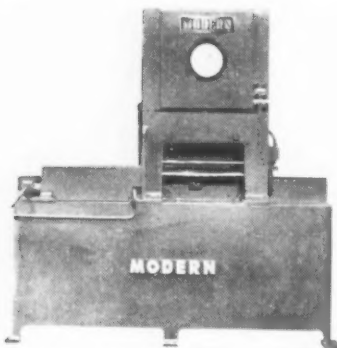


## Midget x-ray machine of 250,000 v is portable

Less than 15 in. in diam x 44 in. long, a new x-ray machine is 56 pct smaller than the conventional 250,000 v x-ray machine. Weighing only 150 lb it can be brought to the product instead of bringing the product to the machine. Secret of size and weight reduction is the use of a high frequency, resonant transformer; multi-section x-ray tube that is grounded at the end

is key to the machine's versatility. The unit is capable of inspecting 3 1/2-in. steel; can be adapted to inspecting products made of everything from magnesium to steel. Resotron 250 trailer holds tube head (the only part that need be moved to the site of radiography), water cooler and the control panel. *General Electric Co.*

For more data circle No. 18 on postcard, p. 63.



## Conveyerized machine pressure-tests for leaks

Water jacket areas in automotive engine cast iron cylinder heads can be checked for leaks with the new automatic conveyerized pressure testing machine. The machine receives the head from a conveyer line, automatically seals the heads in three planes, checks for leaks by measuring air pressure loss. A red light indicates parts that do not

pass the test. A green light indicates satisfactory parts which are automatically stamped OK by a solenoid-operated marking device. Power is supplied by a hydraulic pump driven by a 3 hp motor. Floor space of the 80-in. high machine is 60 x 120 in. *Modern Industrial Engineering Co.*

For more data circle No. 19 on postcard, p. 63.



## Magnesium ramp loads cars from ground level

Loading and unloading freight cars from ground level where no dock facilities are available or existing facilities are congested are simplified with a new portable magnesium yard ramp. Five standard sizes all 30 ft long vary in widths of 60 and 70 in. Capacities range

from 6000 to 16,000 lb, capacity being the combined weight of the load and the material handling equipment transporting the load over the yard ramp. One end of ramp is raised by hydraulic mechanism. *Magnesium Co. of America.*

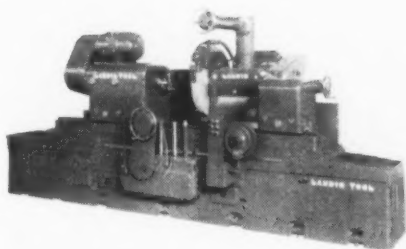
For more data circle No. 20 on postcard, p. 63.

Turn Page



## New Equipment

Continued

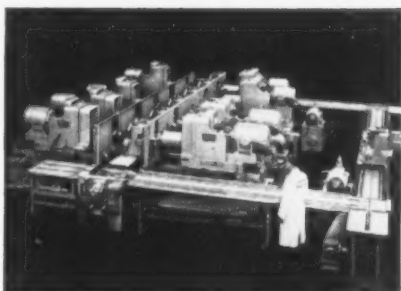


### Plain grinder facilitates large diameter work

Parts such as turbo-jet engine rotors, track carriers, large diameter motor armatures and water valves can be handled on the new line of plain grinders. The type CHW provides a precision cylindrical grinder of the correct size, engineered to grind work accurately and efficiently. A 10 or 15 hp motor drives the 30-in. diam grinding wheel. Variable speed head-

stock drive is standard but constant speed is available. Hydraulic table travel is adjustable to any desired speed between 3 and 130 ipm, and a swivel table may be adjusted to grind tapered work. Wheel spindle runs in Landis Microsphere bearings. The machine is available in 30, 36, and 48-in. swings. *Landis Tool Co.*

For more data circle No. 21 on postcard, p. 63.

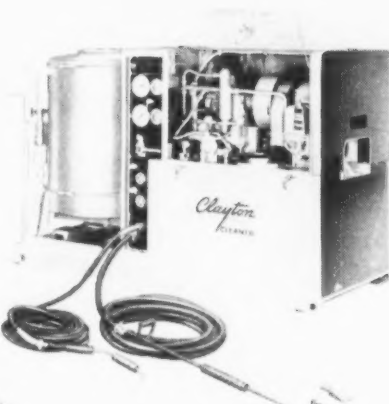


### Machine produces tank idler arms

Defense production of tank idler arms has been stepped up considerably by means of a new Transfermatic designed to finish 6½ tank arms per hr. The material is cast armor with a hardness of 36 Rc. Operations include core-drilling and reaming the small hole and hollow

milling the boss around the small hole; rough and semifinish boring the large hole and trepanning the groove on one end. This Transfermatic has six stations: one for loading and five for machining. Preset tools reduce downtime. *Cross Co.*

For more data circle No. 22 on postcard, p. 63.

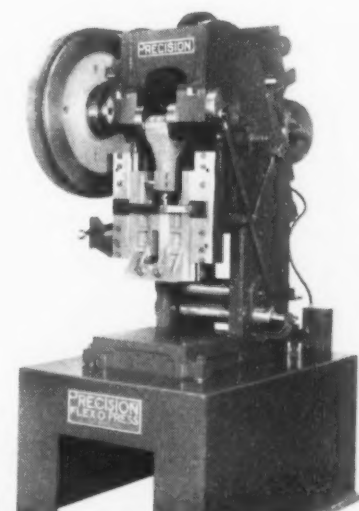


### Steam cleaner offers double cleaning capacity

Extra heavy-duty and high capacity Kerrick steam cleaner is capable of discharging 540 gph of pressure detergent spray and 540 gph of hot or cold pressure rinse simultaneously. It is designed to solve the cleaning problem in any operation requiring large scale cleaning on a mass-production scale. Equipped with a 60-gal detergent concentrate tank and a 40 gal fuel tank, the new cleaner will operate for 4 hr

continuously at maximum load. Vapor generator operated with a thermal efficiency in excess of 80 pct under all operating loads; pressure atomizing burner system, equipped with safety switch control, operates on common, low-cost fuels. Metering device maintains the detergent-water ratio at effective level for rapid, thorough cleaning. *Clayton Mfg. Co.*

For more data circle No. 23 on postcard, p. 63.



### Feed rolls built as integral part of new press

High speed automatic stamping press of 30-ton capacity embodies several new features: Both ram and connecting link are high strength, light alloy material approximately 35 pct the weight of cast iron alloys; press ram is contained on multiple ball bearings, operating in hardened and ground tool steel raceways, insuring accurate alignment; roll lift is adjustable in ten steps for varying thicknesses of material. Feed rolls built as an integral part of the machine for closest relationship to the

die are infinitely adjustable through over-running clutch from 0 to 12 in. feed. Heavy band brake anchored to clutching arm eliminates brake drag in automatic operation. C30 Flexopress has versatility of feeding and stamping materials ranging from 0.002 in. thick aluminum foil, plastics, gasket materials, paper used in box construction to heavy metals. Speed is infinitely adjustable from 110 to 450 strokes per min. *Precision Welder & Flexopress Corp.*

For more data circle No. 24 on postcard, p. 63.

Turn Page

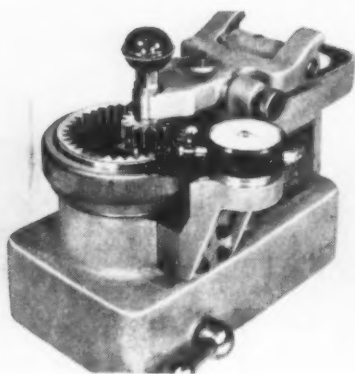


### Unit applies torque converter

Fluid torque drive is standard equipment on Unit's  $1\frac{1}{2}$  yard crawler and mobile machines. Unit with fluid torque drive accomplishes smoother load handling by throttle and cushions lifting and digging with greater work output without increasing the fuel consumption. The torque converter in mobile equipment allows for smooth

break-away performance. The installation still retains Unit's method of mounting the engine straight-in-line with the main machinery. The fact it is connected to a worm driven power take-off by means of a chain coupling eliminates engine clutch and its lever system. *Unit Crane & Shovel Corp.*

For more data circle No. 25 on postcard, p. 63.



### Rolling fixtures check gear size, eccentricity

New bench-type internal gear rolling fixtures check size, eccentricity, roll smoothness and face runout. Gears to be checked are located in a pot-type chuck mounted on a vertical spindle supported by preloaded ball bearings. The master gear is swung down by a lever-controlled eccentric into mesh with the gear to be checked. Size, eccentricity, and roll smoothness are indicated

by a 0.0005 in. indicator while the knurled pot chuck is rotated manually. Another indicator shows face runout of gear simultaneously. Control lever ejects the gear from the chuck. Gears from 4 to 12 in. OD can be checked. Rolling fixtures can be used in conjunction with automatic recorder to make permanent charts. *Michigan Tool Co.*

For more data circle No. 26 on postcard, p. 63.

## Quality Craftsmanship

Since 1907—for 45 years—The Cincinnati Gear Company has been producing **Gears—Good Gears Only**. Expert, efficient craftsmen, working with top quality materials, have built for The Cincinnati Gear Company an enviable reputation. So, no matter what your gear requirements might be—no matter how large or small the order—write, wire or call for estimates, prices and complete details



Spur  
Helical  
Worm  
Herringbone  
Internal

\*Coniflex Bevel  
Spiral Bevel  
Spline Shaft

\*Reg. U. S. Pat. Off.



## THE CINCINNATI GEAR COMPANY

"Gears . . . Good Gears Only"

Wooster Pike and Mariemont Ave. • Cincinnati 27, Ohio

### Press parts conveyer

A compact, all-purpose, portable pressparts power driven conveyer automatically moves stampings between progressive operations or conveys scrap from press to tote boxes or conveyer belt. Conveyers are built in standard sizes, 6, 12, and 18-in. wide x 6, 11, and 16 ft long. Belts are available with or without cleats and fabricated from rubber, cotton, stitched canvas or wire mesh. They are equipped with heavy-duty gearhead motors and electrical characteristics may be 110 or 200 v, 25 or 60 cycle. *Sage Equipment Co.*

For more data circle No. 27 on postcard, p. 63.



### Corner protectors

Covering for sharp corners of metal sheets is provided by Self-Stik corner protectors. Made of rubberized fiber material, these self-stick triangular-shaped pieces can protect against both personal injuries and costly refinishing during handling, fabricating, stacking, shipping, and storage. *Mystik Adhesive Products.*

For more data circle No. 28 on postcard, p. 63.

### Steel welded trailer

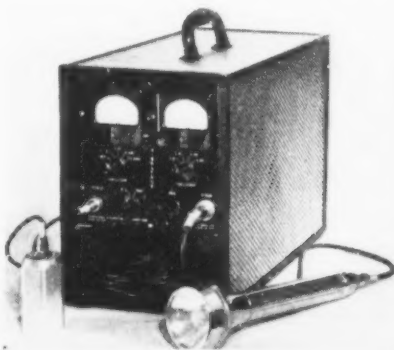
All-steel welded trailer of 20,000 lb loading capacity is designed for dock and yard service. It has non-skid deck 7 ft wide x 14 ft long and height is 22½ in. Heavy cast steel wheels are Timken bearing mounted on 2¾ in. diam axles and fitted with 15 x 8 in. pressed-on solid rubber tires. Long loop handle drawbar affords easy steering and maximum maneuverability. *Mercury Mfg. Co.*

For more data circle No. 29 on postcard, p. 63.

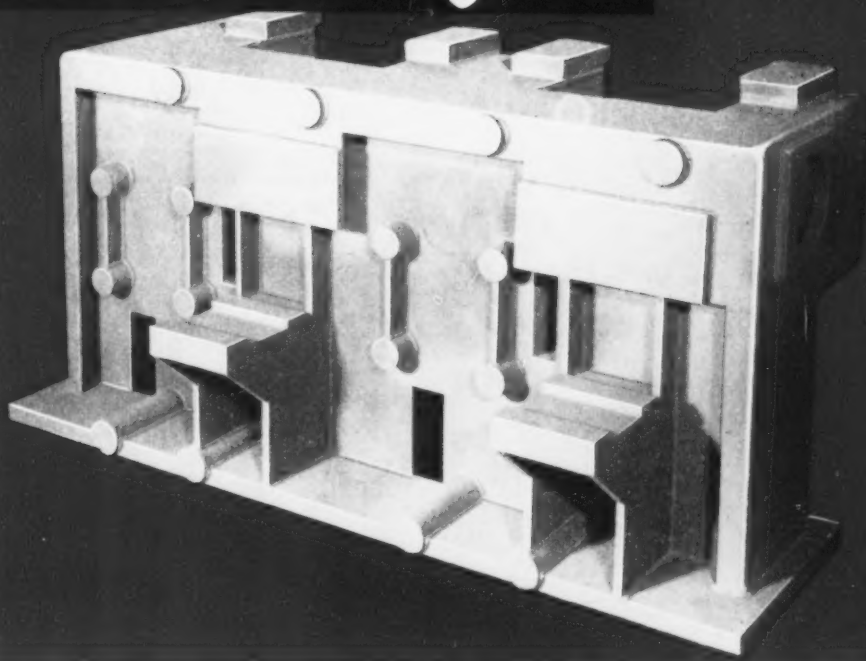
### Balancing machine

Vibratron is a portable, rugged and simple-to-operate electronic machine for the analysis, evaluation, and correction of vibration. It will measure accurately and without computation the amplitude and frequency of the vibration and, by means of a stroboscopic light, discover the source. It consists essentially of a vibration pickup, a multi-channel electronic circuit, and a stroboscopic lamp. It operates on 110 v 60 cycle current. *International Research & Development Corp.*

For more data circle No. 30 on postcard, p. 63.



# use castings?



## WELDMENTS CAN SAVE YOU MONEY!

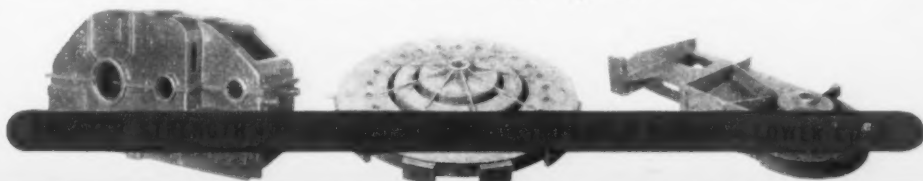
Acme weldments are replacing castings for leading machinery and equipment manufacturers everywhere because they do a better job at lower cost. Experienced Acme engineers at work with Acme's complete fabrication facilities can give you these same advantages . . . Acme's new 24-page, illustrated booklet shows you why. *The Facts about Weldments and Castings* tells you what you should know about their relative strength, rigidity, vibration, design flexibility, and cost . . . facts to help you specify and save. And it's yours for the asking . .

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- A.S.M.E. Qualified Welders
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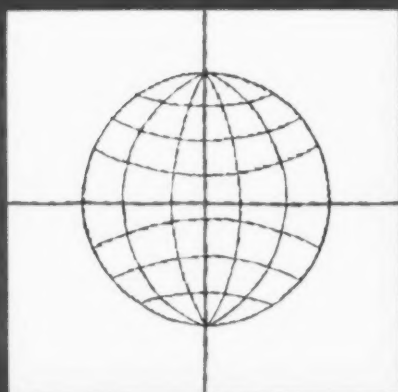




From  
Dutch Harbor  
to the Suez Canal

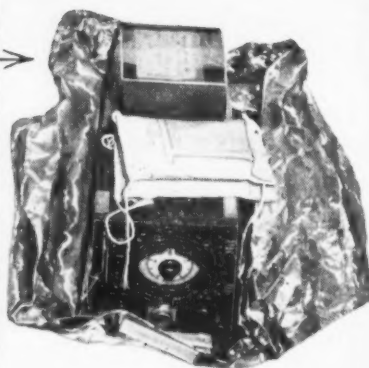
Dobeckmun  
Barrier

Materials give top protection!



*Metalam® qualifies under the following specifications:*

*MIL-B-131A, Classes A & B  
MIL-B-131A, Class D  
MIL-C-6056, Type III  
MIL-E-6060, Type II  
MIL-B-7841 (Aer), Classes 1 & 2  
AN-B-20, Type II  
JAN-P-117, Type II, Grade A, Class d  
JAN-P-131, Type I, Classes A & B  
JAN-P-131, Type I, Class D*



*Benbar® qualifies under the following specifications:*

*JAN-P-117, Type I, Grade A, Classes a, b, c  
JAN-P-117, Type II, Grade A, Classes a, b, c  
JAN-B-121, Type I, Grade A, Class 1 (regular and stretchable)  
JAN-B-121, Type II, Grade A, Class 1 (regular and stretchable)*

The  
**Dobeckmun**  
Company,  
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Berkeley 2, California  
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When a product may go anywhere in the world, and then be stored for months at temperatures ranging from 20° below zero to a steaming tropical 120°, Dobeckmun Barrier Materials always give top protection. That's why they stand so high in military packaging . . . they stay flexible, grease-proof, acid-free and non-corrosive at all times. And it's small wonder that they do because Dobeckmun is the pioneer and leader in the Barrier Material field, with packaging experts at your call in cities from coast to coast.

# *The* **Iron Age**

## **SALUTES**

*H. Harrison Fuller*

This quietly efficient industrialist applies his wide knowledge of steelmaking through teamwork.



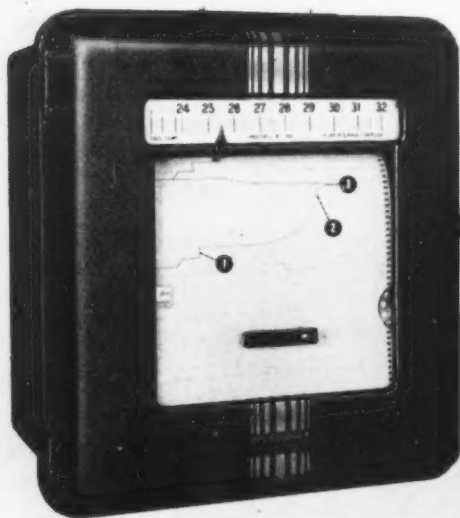
**H**ARRISON FULLER represents the "new look" in steel executives. Quietly efficient and thoroughly informed, he is a striking contrast to the more colorful (and harried) rugged individualists in the industry. He gets results by delegating authority to a corps of competent aides with whom he works as a team on all steel matters.

As first president of Bethlehem Pacific Coast Steel Corp., Harrison has presided over Bethlehem's biggest western expansion. Major accomplishment has been conversion of the Bethlehem Pacific plant in smog-conscious Los Angeles from openhearth to one of the country's largest all-electric carbon steel producers.

Born on Shelter Island, N. Y., Harrison graduated from Amherst in time to become a first lieutenant in the U. S. Air Force in World War I. He joined Bethlehem in 1918, working at the Bethlehem and Sparrows Point mills. In 1936 he returned to New York as assistant sales manager, jumping to manager 2 years later.

He went to San Francisco as vice-president of Bethlehem's West Coast Div. When the division was made Bethlehem Pacific Coast Steel Corp. Harrison became president.

Although wrapped up in steel most of his waking hours, Harrison has the happy gift of forgetting business entirely when on periodic vacation travels, both here and abroad. He also finds time to play an active part in Red Cross fund raising, Chamber of Commerce activities, and national and state manufacturers' associations.



Significant points on chart of Speedomax Immersion Thermocouple Recorder at left are: (1) standardization of recorder circuit during couple immersion; (2) temperature of steel bath, and (3) increase in thermocouple temperature during withdrawal through slag. Entire measuring sequence is swiftly recorded by Speedomax in less than one minute.

In the illustration below, an operator plunges an L&N Immersion Thermocouple, connected to a remotely-located Speedomax Recorder, into the steel bath . . . withdraws it as soon as the Recorder signals that temperature measurement is complete.



## Important Speedomax Feature guards accuracy of Bath Temperature Measurements

• Now the L&N Immersion Thermocouple Recorder standardizes itself during each measurement . . . helps assure quick, accurate use of immersion thermocouples in measuring temperatures of molten steel.

Occurring only *seconds* before the thermocouple reaches maximum temperature, this adjustment eliminates variations resulting from ambient temperature changes. And since standardization is completely automatic—initiated by each immersion of the couple into the steel bath—the operator is freed of responsibility for this critical detail.

### CAREER OPPORTUNITIES AT L&N

Expansion program of this long-established firm has many features to attract outstanding recent graduates in engineering and science. Opportunities are in sales field engineering, product and application engineering, research, advertising, market development. Widely-respected policies assure recognition of progress and achievement. Address Personnel Manager for preliminary interview at nearest of 17 L&N offices.

Jrl. Ad N-33-640 (3)

This simplicity characterizes all steps in using the Speedomax Recorder and Signal System for immersion measurements. Signal lights at the furnace, remotely operated by the Recorder, indicate whether the immersion equipment is operable, and warn when bath temperature is reached. Each immersion then results in a significant measurement—and minimum exposure to the high temperature prolongs couple life.

Used with the widely-accepted L&N Immersion Thermocouple, or with *any* immersion couple, the Speedomax Recorder and Signal System promotes improved immersion techniques and reliable measurements . . . results in reduced cost per reading.

For details, write us at 4956 Stenton Ave., Philadelphia 44, Pa., for Folder N-33-640(1), "Measure Bath Temperatures Effectively", or contact your nearest Leeds & Northrup representative.

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# The Iron Age

## INTRODUCES

**Mead W. Batchelor**, appointed president, **THE RIVERSIDE METAL CO.**, Riverside, N. J.

**Ferdinand J. Stackel**, named executive assistant to vice-president in charge of government contracts, **ACF-BRILL MOTORS CO.**, Philadelphia.

**Roy H. Appleman**, promoted to executive assistant, Chrysler Div., **CHRYSLER CORP.**, Detroit.

**Edwin D. Scott**, becomes head of research and development staff, **THE AMERICAN FORGING & SOCKET CO.**, Pontiac, Mich.

**L. L. Dalbey**, elected treasurer and controller, **THE ARMS-FRANKLIN CORP.**, Youngstown; **Karl W. Matthes**, appointed chief engineer; and **J. C. Holdgate**, named assistant to the president.

**John E. Jackson**, elected president, **AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC.**

**Morris Mokren**, promoted to assistant chief of the Service Engineering Dept., **ENGINEERING & RESEARCH CORP.**

**Kenneth A. Anderson**, appointed director, **AMERICAN BRAKE SHOE CO.**, New York, and **Joseph Gresh**, appointed assistant director of Personnel Services.

**Dwight W. B'oser**, appointed chief engineer, **TRANSICOIL CORP.**, New York.

**Neil L. Anderson**, appointed manager, Steelstrap Dept., Acme Steel Products Div., **ACME STEEL CO.**, Chicago.

**E. E. Schaffer**, appointed staff engineer, **THE HAROLD F. HOWARD CO.**, Detroit; and **E. E. Williams**, appointed staff engineer also.

**Charles R. Lippold**, appointed director of advertising sales for **THE IRON AGE**, New York. Other appointments are: **William M. Coffey**, circulation manager; **James A. Crites**, promotion manager; **Charles T. Post**, regional business manager for New York and upper New Jersey; and **Harry G. Mumm**, regional business manager, Central Ohio. **Robert W. Watts**, becomes regional business manager in Cleveland the first of the year.\*

**Lawrence H. Reccamper** and **James A. Cole**, appointed forging engineering specialists, **KAISER ALUMINUM & CHEMICAL SALES, INC.**, and **Ernest Rothschild** promoted to export manager.

**William M. Clossey**, elected secretary and treasurer, **COWLES CHEMICAL CO.**, Cleveland.

**Robert F. Hainge**, joins sales staff **DELANIUM CARBON CORP.**, New York.

**William O. Nussear, Jr.**, named sales promotion manager, **SUPERIOR TUBE CO.**, Norristown, Pa.

**Peter Kuopus**, promoted to district manager, new branch warehouse in Syracuse, N. Y., **A. R. PURDY CO.**

**Alan B. Castator**, appointed general sales manager, Brush Div. factories, **PITTSBURGH PLATE GLASS CO.**

**Charles Landers, Jr.**, appointed assistant sales manager, **GUNNISON HOMES, INC.**

**George Seeburg**, promoted to assistant general manager, **SUNDSTRAND MACHINE TOOL CO.**, Rockford, Ill.; **T. B. Buell**, promoted to general sales manager in charge of overall sales policies; and **Harry Leber**, named sales manager.



**WALTER H. WIEWEL**, vice-president in charge of sales, **Crucible Steel Co. of America**, elected to board of directors of **Rem-Cru Titanium, Inc.**



**JOSEPH S. IMIRIE**, appointed assistant to the president, **The Carborundum Co.**, Niagara Falls, N. Y.



**ROWLAND H. COLEMAN**, vice-president and director of sales, **Remington Arms Co.**, elected to board of directors of **Rem-Cru Titanium, Inc.**



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## Personnel

Continued

George A. Adlam, named application engineer in the blower and condenser section, ALLIS-CHALMERS MFG. CO.; Bernard M. Koetting, named assistant engineer in the motor and generator section; and Stanton H. Telander, named assistant engineer in the switchgear section.

Loren G. Barnes, appointed district sales manager, Illinois, Wisconsin, and Minnesota, FAGEOL HEAT MACHINE CO.

J. W. Broomhead, appointed plant manager, metal container plant, Pittsburgh, CONTINENTAL CAN CO.

Robert E. Alexander, heads new district sales office of THE SWARTWOUT CO. in Cambridge, Mass.

E. W. Robertson, appointed district used trailer sales manager, Allegheny Div., FRUEHAUF TRAILER CO.

F. E. Suder, appointed general manager, Jarecki International Supply Div., H. K. PORTER CO., INC., Dallas.

J. Paul Sturtevant, promoted to assistant personnel director, VAN NORMAN CO., Springfield.

Charles A. Festge, appointed Milwaukee district manager, CHASE BRASS & COPPER CO., INC., a subsidiary of Kennecott Copper Corp.

Joseph Warren, appointed manager domestic branch office administration, INTERNATIONAL BUSINESS MACHINES CORP., and Herbert J. Parman, named manager, Retail Dept.

E. W. Petersen, appointed general sales manager, AMERICAN BLOWER CORP., Detroit.

W. G. Felton, appointed general traffic manager, PITTSBURGH STEEL CO., Pittsburgh.

William K. Underhill, appointed assistant plant manager, JOSEPH T. RYERSON & SON, INC., New York.

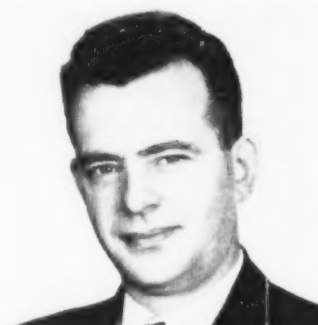
V. Z. Pavlenko, appointed assistant export divisional manager, CATERPILLAR TRACTOR CO., Peoria, Ill.

Alfred E. Lambert, Jr., named New England manager of distribution apparatus sales, WESTINGHOUSE ELECTRIC CORP.

Robert M. Wright, appointed purchasing agent, THE STANT MFG. CO., INC., Connerville, Ind.



A. N. ABELSON, appointed vice-president in charge of manufacturing, Aro Equipment Corp., Bryan, Ohio.



ELMER W. KRUEGER, appointed vice-president, The Cleveland Pneumatic Tool Co., Cleveland.



JAMES M. MEAD, appointed first assistant to vice-president in charge of purchasing, procurement and merchandising, Joseph T. Ryerson & Son, Inc., Chicago.



MARCUS M. CHAPMAN, appointed assistant general manager of sales-distribution, U. S. Steel Co.

# THE AMERICAN STORY

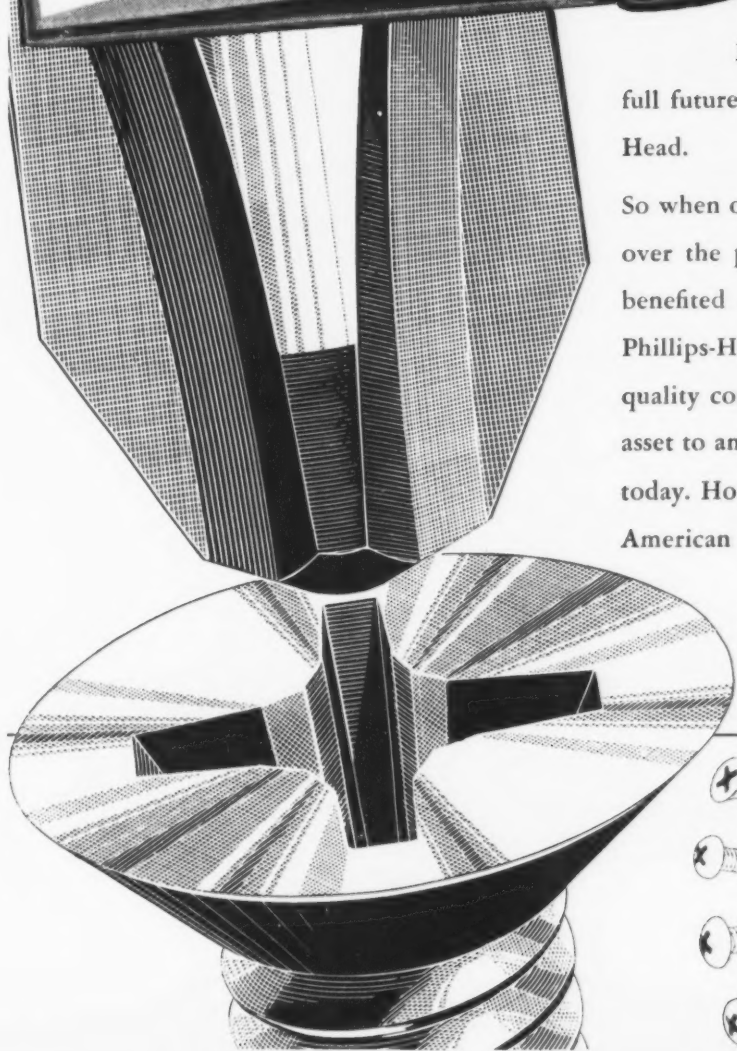
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Many looked into it . . . but American saw the full future of the "screwy" idea of the Phillips Recessed Head.

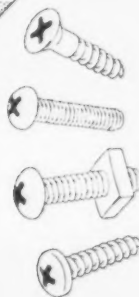
So when others said *no*, American said *yes*. And as a result, over the past 16 years, industry all over the world has benefited from the speed and cost-control that only Phillips-Head Fasteners can give. That idea, plus American quality control and quantity production, is a tremendous asset to any manufacturer fighting to keep his costs down today. How are *you* doing? Maybe there's something that American Phillips Screws can do for you now. Write:



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SCREW  
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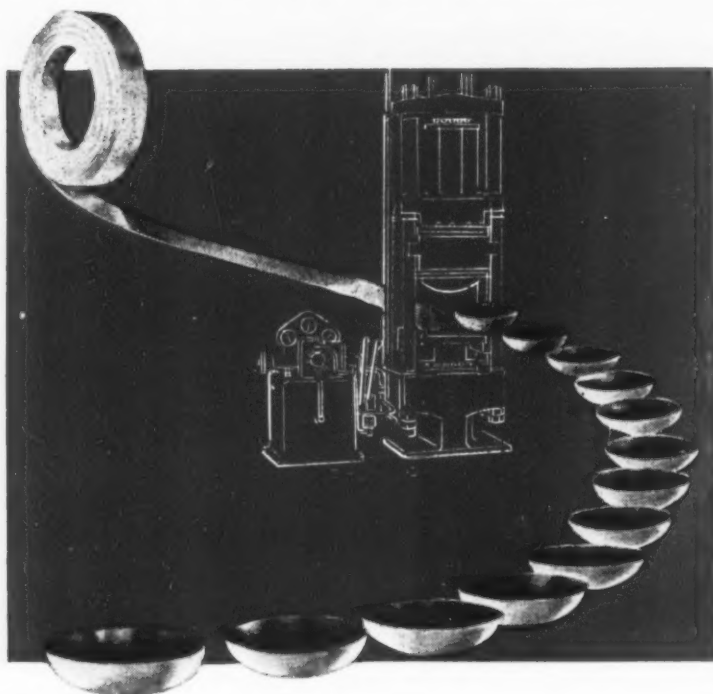
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Main Office & Plant  
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FOLLANSBEE METAL WAREHOUSES

Pittsburgh, Pa.

Rochester, N.Y.

Fairfield, Conn.

## Personnel

*Continued*

Warren F. Maegii, named field en-  
gineer, Milwaukee area, BULLDOG  
ELECTRIC PRODUCTS CO.; and  
Raymond O. Reinghardt, also named  
field engineer, St. Louis area.

Robert E. Taylor, appointed to staff  
of Advertising Div., REPUBLIC  
STEEL CORP.

Landon C. Fuqua, appointed sales  
representative, Chicago, STANDARD  
PRESSED STEEL CO.

Howard E. Earl, becomes chief en-  
gineer in charge of Engineering  
Dept., SUNDSTRAND MACHINE  
TOOL CO., Rockford, Ill.

William H. McGill, appointed field  
representative, Hydraulic Control  
Div., BLACKHAWK MFG. CO., Mil-  
waukee.

D. R. Leiser, appointed representa-  
tive, in Michigan, WHITTAKER,  
CLARK & DANIELS, INC., New  
York.

Frederick E. Wenzel, appointed gen-  
eral manager, TRENT TUBE CO.,  
East Troy, Wis.

Douglas R. Williams, made staff  
assistant, Manufacturing Div., ARMA  
CORP.

R. A. Willinganz, will head new  
Detroit branch office, R. S. ARIES &  
ASSOCIATES, New York.

## OBITUARIES

Benjamin F. Harris, former presi-  
dent National Tube Co., Oil Well Sup-  
ply Co. and Tubular Alloy Steel Corp.,  
U. S. Steel Corp., at West Penn Hos-  
pital, recently.

William C. Ireland, 55, assistant to  
the president, Bundy Tubing Co., De-  
troit, after a long illness.

Fred H. Haggerson, 68, chairman of  
the board Union Carbide & Carbon  
Corp., at Roosevelt Hospital, New  
York, after a short illness.

Albert Finlay, 86, chairman of the  
board, George H. Ellis Co., Boston, at  
his home there recently.

Allan P. Harrison, general pur-  
chasing agent, The Robert Mitchell  
Co. Ltd., and Geo. R. Prouse Range  
Co. Ltd.

Ernest J. Kelly, 61, retired works  
engineer, AC Spark Plug Div., Gen-  
eral Motors, in Flint, Mich., recently.



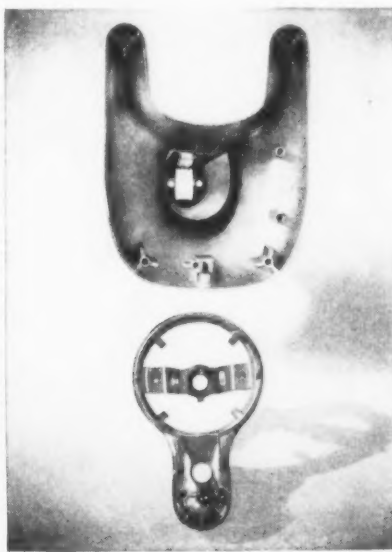
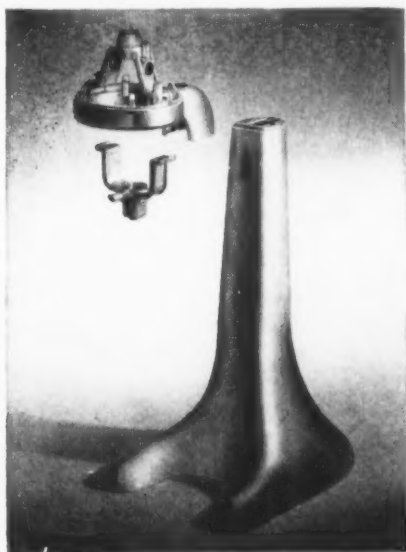
## THIS NEW HOME DRINK MIXER BY HAMILTON BEACH

SHOWS HOW TO  
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Hamilton Beach market experts established that a low cost mixer which would make real soda fountain drinks at home would have immediate acceptance. But it remained for the design engineers to produce a unit that would work just like a fountain mixer, yet would be priced for mass distribution. This design goal was achieved, in large measure, through the use of the three ZINC Die Castings pictured below—the base, the combined motor housing collar and upper bracket, and lower bracket.

By any means other than die casting, these components would involve expensive machining, or they would have to be built up from several additional parts. As ZINC Die Castings, the only operations required prior to assembly are simple broaching and tapping. Two of the castings are shown from the underside (below) to reveal other economies. Note that they are cast hollow in thin section to minimize metal, and all assembly holes and bosses are provided in the casting operation.

It is the unusual castability of the ZINC Alloys—in high speed plunger-type machines with long die life—that accounts for the preference for this metal by die casting engineers. In selecting a die casting alloy there are many factors other than base price of the metal to be considered. Ask any commercial die caster about the economic and physical advantages of ZINC Die Castings. Ask us for a copy of a pamphlet which will reassure you on the present and future supply of zinc.



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AGE



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**Technical Articles**

# HARD ALUMINUM FINISHES

## resist wear and abrasion



By R. V. Vanden Berg

Head, Finishes Section  
Process Development Laboratories  
Aluminum Company of America  
New Kensington, Pa.

Aluminum is versatile in respect to surface treatments. It responds to a wide variety of surface treatments to give finishes with increased resistance to abrasion and corrosion, or which add attractive decorative effects.

When aluminum is the anode in certain electrolytes, a dense oxide coating may be formed on its surface. The characteristics of this coating may be changed by variation in operating technique. However, in every case the coating is integrally bonded to the surface.

Procedures have been developed recently that produce anodic coatings of greater thickness and increased density, Fig. 1. Because of their substantial thickness (0.001 to 0.005 in.) and denser structure, these coatings support greater loads and overcome deficiency of thinner anodic coatings with reference to scratching or indentation type abrasion. Also, because of their extra thickness, the coatings are highly resistant to corrosion and have high dielectric strengths. Although these heavy coatings are much more resistant to abrasion than the thinner coatings, care must be taken to avoid high localized loading.

For applications involving resistance to rubbing or erosion, Alumilite coatings 225, 226, 725, 726 and Martin Hard Coating finishes are applicable. The 225 and 226 coatings are for

Harder, thicker and denser anodic surface coatings, have considerably better resistance to wear and abrasion, are now available on aluminum. These hard oxide coatings on light-weight aluminum alloys may very well replace heavier metals for such things as gears, slides, pinions, pistons and many aircraft applications. Other materials such as chromium, tin, brass and lead have also been coated on aluminum to give this metal outstanding characteristics.

wrought alloys, whereas the 725 and 726 are for cast alloys. The "25" series has been standardized as 0.001-in. thick and the "26" series as 0.002-in. thick. The MHC finishes range in thickness from 0.001 in. to .005 in., depending upon the operating procedures used to produce the coating. In general, an allowance of 50 pct of the coating thickness should be made for increase in dimensions.

Resistance to abrasion of the hard coatings has been compared with that of the coatings ordinarily employed for decorative or protective purposes by two different abrasion tests. One of these tests established the resistance to wear



**"Resistance to abrasion of the hard coating is double that of an ordinary coating . . ."**

by rubbing. The other determined the ability of these coatings to resist erosion from a grit blast. To determine wear from the rubbing type of abrasion a Taber abrasion tester was used, Fig. 2. This tester employs a rotating rubber-bonded abrasive wheel in contact with the oxide coated surface of a specimen under a definite load. The resistance to wear is determined by measuring the depth of the groove worn in the oxide coating after a given number of cycles.

For the grit blast type of abrasion test, an apparatus similar to the ASTM abrasimeter is employed, Fig. 3. This instrument consists essentially of a nozzle in which a suitable abrasive is suspended in air and impinged on the surface of the oxide coating under test. The weight of oxide worn away by the action of a certain number of grams of abrasive or the weight of abrasive required to cut through a unit thickness of the oxide coating is recorded as a measure of the resistance of the oxide coating to abrasion.

From abrasion tests of this type, it has been found that these new hard oxide coatings are much more resistant to wear and abrasion than the thinner oxide coating. In general, the improvement in resistance to the rubbing type of abrasion is much greater than that for the blast type of abrasion. Glenn L. Martin Company reported that after 50,000 cycles on the Taber Abraser, a MHC coating 2 mils in thickness

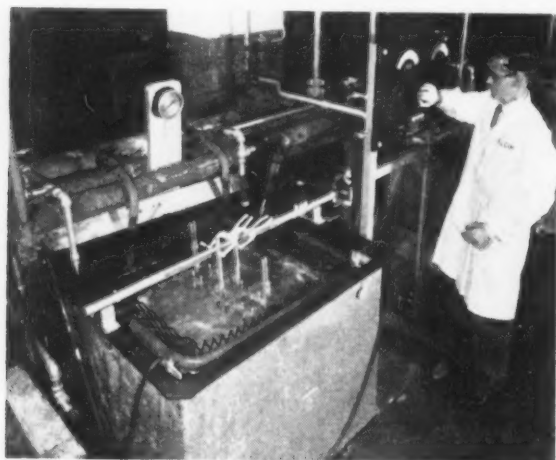


FIG. 1—Aluminum objects immersed in anodizing tank for application of an abrasion-resistant coating.

TABLE I

**GRIT BLAST ABRASION TESTS\* ON OXIDE COATINGS**

Alloy	Type of Coating	Thickness of Oxide Coating	Grams of Abrasive to Wear through Coating	Grams of Abrasive per mil of Coating
S-H18	Alumilite 204	0.47 mil	35	75
	Alumilite 215	0.90	88	98
	Alumilite Hard Coating 226	2.24	387	173
	Martin Hard Coating	2.77	405	146
3S-H18	Alumilite 204	0.53 mil	33	62
	Alumilite 215	0.95	94	99
	Alumilite Hard Coating 226	2.33	368	158
61S-T6	Alumilite 204	0.46 mil	41	89
	Alumilite 215	0.88	90	102
	Alumilite Hard Coating 226	2.15	364	169
	Martin Hard Coating	2.31	390	169
75S-T6	Alumilite 204	0.45 mil	46	102
	Alumilite 215	0.90	76	84
	Alumilite Hard Coating 226	2.13	357	166
24S-T3	Alumilite 204	0.41 mil	22	54
	Alumilite 215	0.78	36	46
	Alumilite Hard Coating 226	2.10	142	68
	Martin Hard Coating	2.48	163	66

\* All coatings unsealed. No. 180 grit emery employed at pressure of 5 psi. Orifice diam is  $\frac{1}{16}$  in.

showed only about half as much wear as case-hardened steel. In the grit blast abrasion test, the resistance to abrasion of the hard coatings is about double that for an ordinary coating of the same thickness. Results of grit blast abrasion tests on ordinary and hard oxide coatings on a number of wrought aluminum alloys are shown in Table I.

These hard coatings are under trial where resistance to abrasion or wear is important. From these practical tests, the suitability of new hard coatings for various uses will be established. Results obtained thus far appear very promising and these more abrasion resistant oxide coatings will widen the field of application for anodic coatings and for aluminum alloys.

The type of alloy being coated has a definite effect on the characteristics of hard coatings. Care must be taken in applying such coating to casting alloys as the latter usually contain ap-

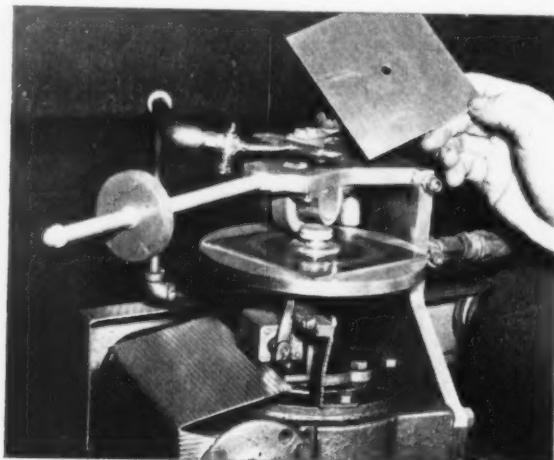


FIG. 2—Rotating abrasion-wheel type of instrument for testing wear resistance of anodic coatings.

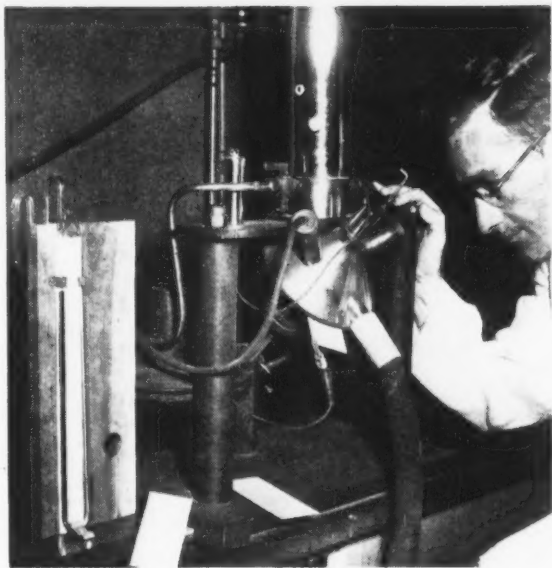


FIG. 3—Grit-blast abrasimeter impinges an abrasive on anodic coating to test for hardness and thickness.

preciable amounts of silicon. Alloys having a silicon content of 7 pct or more do not respond satisfactorily to treatment. Alloys containing high percentages of copper and silicon also will not produce dense coatings of uniform thickness. Coatings will be formed on wrought alloys, such as 11S, 14S, 17S and 24S, but operating conditions are more critical and the coatings are not as resistant to abrasion as coatings formed on alloys 2S, 3S, 52S, 61S or 75S.

These hard, thick coatings are produced in acid-type electrolytes operated at low temperatures and high current densities. Operating techniques such as racking are important because consideration must be given to positive contact during the complete anodic oxidation period. Exceptional agitation and circulation of the electrolyte must be maintained to decrease the possibility of burning in areas of high current density.

Hard anodic coatings for aluminum alloys are of considerable interest to the aircraft industry where a light metal with a hard, wear-resistant finish offers a valuable replacement for parts produced from heavier metals of higher inherent hardness. Aluminum alloys with hard oxide coatings are now used or considered for gears, pinions, bearing races, gun blast tubes, slides, various pistons, helicopter blade edges and numerous other aircraft applications, Fig. 4.

Hard oxide coatings offer possibilities in other fields. An all-aluminum orthopedic brace with the hard coating applied to joints for increased wear is another successful application. These finishes also offer possibilities in applications where aluminum alloys are subjected to the erosive influences of hot gases or liquids. They are now being applied to high velocity pumps and blower impellers to minimize erosion.

Better results are obtained for applications involving the rubbing type of abrasion if the hard anodic coatings are honed to a high degree of surface smoothness and some surface lubricating film such as molybdenum disulphide or various graphite compositions are applied to the surface of the coating.

Hard chromium plating based upon the zinc immersion process is used to increase the surface hardness and wear resistance of aluminum alloys. An excellent example of hard chromium for this application is the cylinder bores of small lightweight 2-cycle gasoline engines. These die-cast cylinders are chromium plated in the bores to increase the output of the small portable engines.

Many applications involving wear or rubbing type of abrasion require deposition of softer metals than chromium. Tin has natural characteristics as a bearing material. Tin coatings have been applied to aluminum alloy automobile pistons to safeguard the piston against scuffing during initial operation. The layer of tin permits closer initial fits with an added margin of safety. Brass coatings have also been used for similar applications with good results. Both tin and brass coatings are applied by simple chemical immersion processes.

#### Suitable substitutes for tin

Owing to recent shortages of tin, Alrok coatings, impregnated with certain graphite-containing compositions, have been evaluated for piston applications and found suitable. This finish is an oxide coating resulting from a chemical oxidation process.

Electroplated tin alloys and lead alloys offer many possibilities as coatings for bearings or other similar applications involving wear. Electroplated zinc and cadmium coatings have been applied to aluminum wire which was subsequently fabricated into slide fasteners. These coatings decrease surface friction and produce smoother operation.



FIG. 4—Some objects such as gears, pistons, slides and pinions are hard-coated for abrasion resistance.

# AUTOMATIC WELDING

## spurs auto frame production



By H. G. Schultz

Manager  
Frame Div., Murray Corp. of America  
Ecorse, Mich.

Conversion to automatic submerged-arc welding for automobile frame construction has increased per man-hr output by 5 times. Each of 4 machines, having 3 pairs of welding heads, now produces 80 box-type frame side rails per hr. Welds are stronger and more uniform. The heads weld at 120 ipm, completing 252 in. of weld on each assembly in 21 sec. All operations, including welding, clamping, feeding welding wire and flux, tracing and slag removal, are fully automatic. And it requires only 25 pct the floor space previously used.

**A**n installation of 4 automatic machines welds 80 box-type automobile frame side rails per machine per hr at the Frame Div., Murray Corp. of America at Ecorse, Mich. Each machine is equipped with 6 Lincoln submerged-arc welding heads which weld at 120 ipm, completing 252 in. of weld on each assembly in 21 sec. The entire operating cycle per side rail takes about 36 sec. All operations, including welding, clamping, feeding of welding wire and flux, tracing and slag removal, are fully automatic.

The control equipment on each machine involves the use of 49 air cylinders, 51 limit switches, 38 electrical relays, and requires 8000 ft of electrical control cables and wire.

The side rails are made from 2 U-shaped stampings, an inner and an outer of 0.105 and 0.089-in. SAE 1020 hot rolled carbon steel, Fig. 1. These stampings are assembled and clamped by machine to assure the close fits essential for quality welds and fewer repairs, Fig. 2. The allowable tolerance between the inner and outer side rail members is from 0 to 1/32 in.

A conveyer moves the assembly to the welding machine, Fig. 3. The operators then load it into position, Fig. 4. Once positioned, clamping is automatic—first in the vertical position, then in the horizontal. A limit switch starts the simultaneous movement of the 6 welding heads into position. Selector switches are provided for



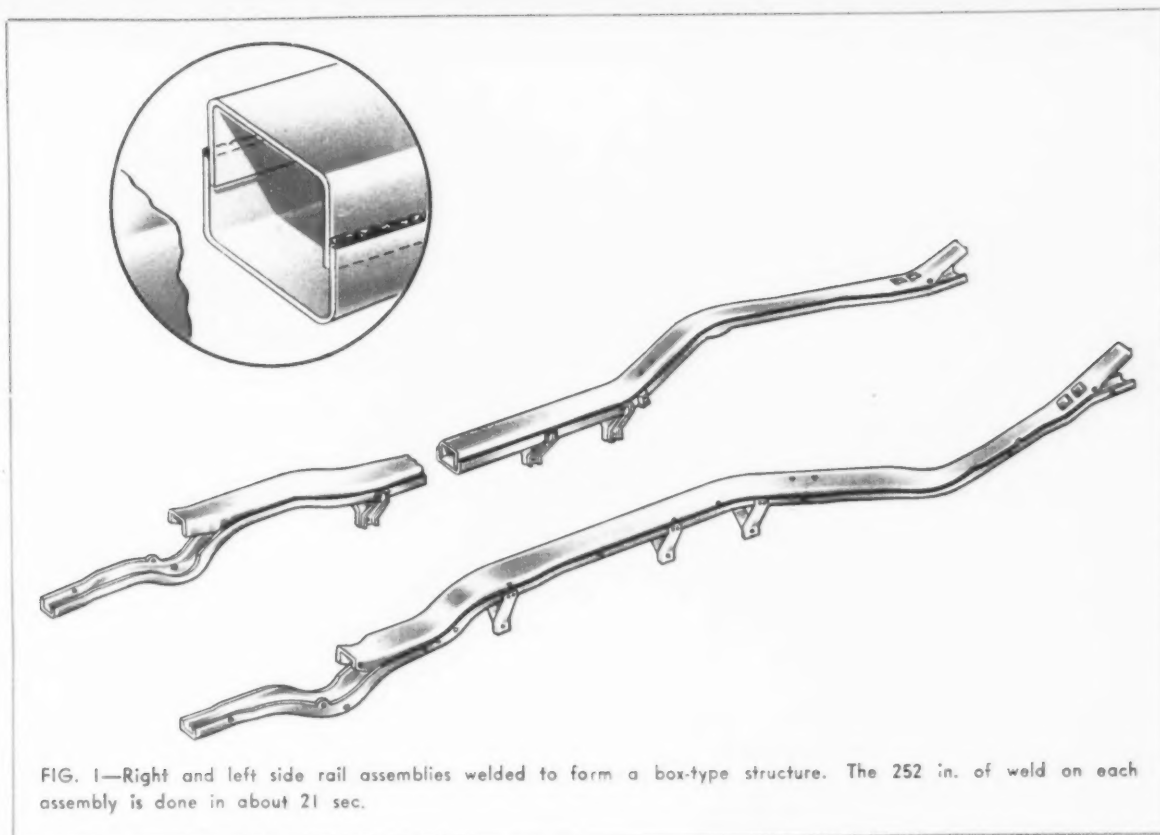


FIG. 1—Right and left side rail assemblies welded to form a box-type structure. The 252 in. of weld on each assembly is done in about 21 sec.

automatic or manual operation and manual control buttons enable operation of an individual head through any phase of the welding cycle. Each of the 2 operators required to operate the machine is provided with an emergency stop button which will stop the machine at any point of the cycle.

Welding wire contact with the work is established on all 6 heads simultaneously. If wire contact with the work fails, welding will not start and a light immediately indicates the location of the failure. This type of failure is minimized by a device which removes fused flux from the end of the wire and thereby eliminates the possibility of the wire being insulated.

Flux handling and reconditioning equipment is an integral part of the machine. A conveyer feeds flux to the welding machine automatically by means of a chain with rubber disks at 10-in. intervals moving at 6 fpm. It feeds the flux forward into funnels from where it is gravity fed through a 6-in. tube into a hopper at each welding head. Surplus flux is salvaged and recirculated through the system.

Welding wire is drawn from large coils mounted above the welding heads, Fig. 5. It is fed to the head automatically at a predetermined rate by motor-driven rolls.

The relative position between welding wire and the joint is critical. It must, therefore, be held within a 1/32-in. alignment with the joint. A tracer, leading the welding wire by 1 in., guides the wire along the compound contours in both the

vertical and horizontal planes. The heat of welding prohibits positioning the tracer closer to the weld. Therefore, on sharp contours, a compensating device automatically brings the welding wire to the correct relative position with the joint.

When welding is completed, the heads retract, the assembly is kicked out by ejector pins and the heads begin to return to welding position while a new assembly is loaded into the machine. Some warpage occurs from welding, but it is held to a minimum because of the uniformity of the stampings and the even heat input during welding. Even so, distortion can be controlled by adjusting the clamping fixtures. When this is done, the welded assemblies are consistently uniform.

After welding, the side rail is transferred to a descaling fixture where spring-wire teeth remove fused flux from the welded areas, Fig. 6. The

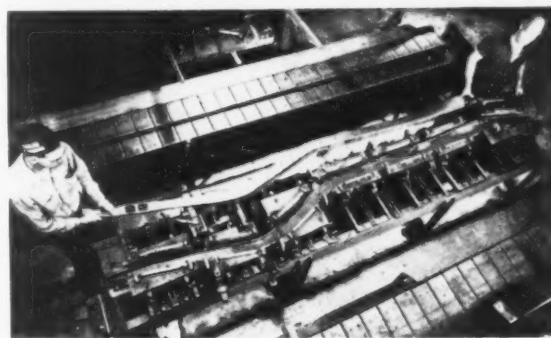


FIG. 2—Mechanical clamping of the side rail stampings assures close fits essential for welding.

**"Fused flux is crushed, graded for particle size and returned to the system for re-use . . ."**

fused flux drops through a trough and is conveyed to a recovery unit. In the recovery process, the fused flux is crushed, graded for particle size and returned to the system for re-use. A magnetic device removes steel particles from the flux. Recovered flux accounts for 34 to 40 pct of the flux used for welding.

Welded side rails are given a preliminary inspection after they leave the descaling fixture. Frame crossmembers are assembled and riveted with the frame clamped in position. Final welding of the crossmembers is done by manual welding. During this phase of operation, the frame

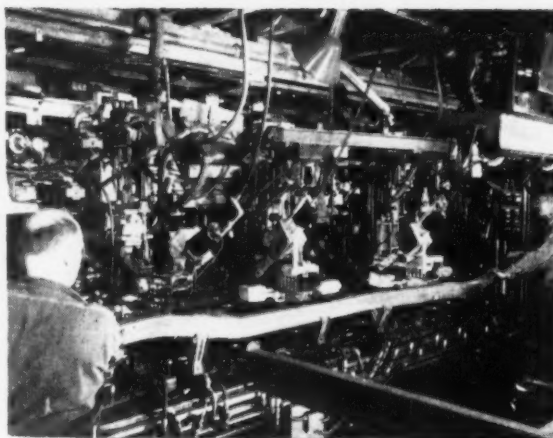


FIG. 4—Six submerged-arc welding heads automatically and simultaneously move into position after the side rail assembly is clamped vertically and horizontally. The heads are guided along the seams by a tracer and contour compensating device for accurate alignment of the welding wire with the joint.

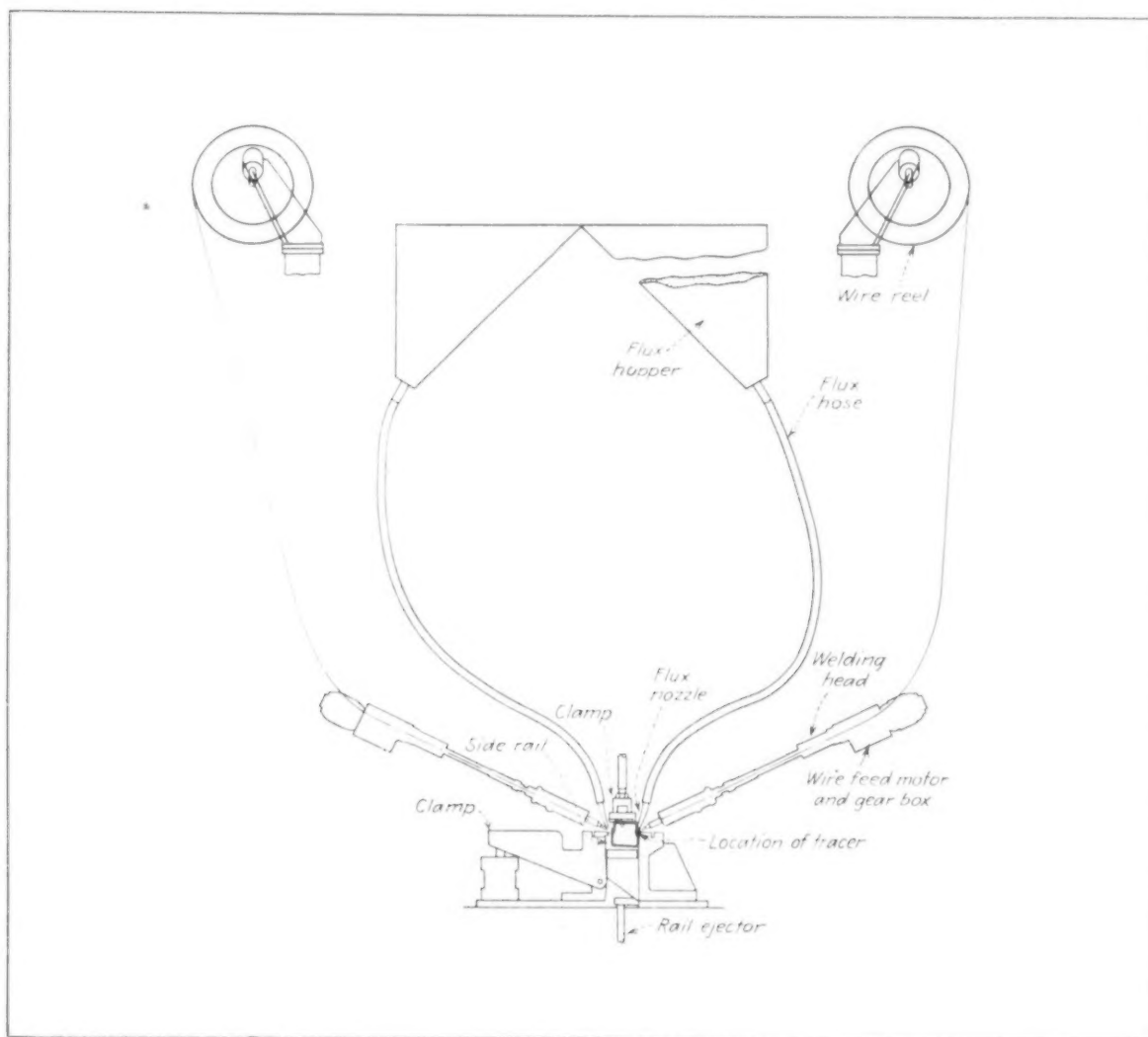


FIG. 3—A simplified drawing of 1 of the 3 pairs of submerged-arc welding heads on each machine shows the essential components for welding. All operations are fully automatic, including clamping, welding, feeding, tracing.

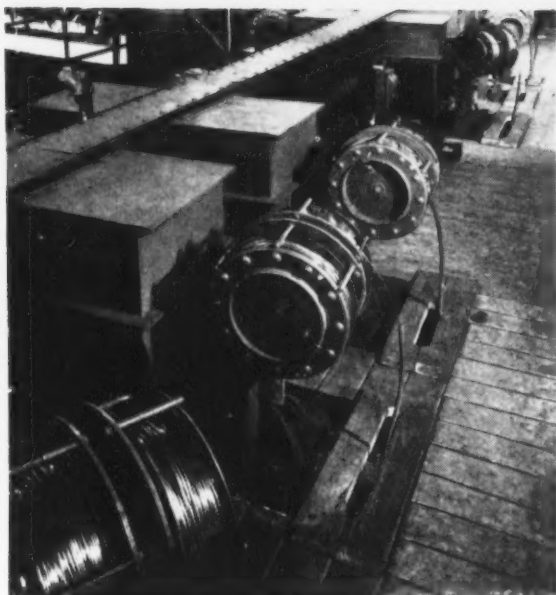


FIG. 5—Welding wire and flux are fed automatically from overhead locations. Both the flux hoppers and wire coils are large to permit continuous operation for long periods without stopping to resupply.

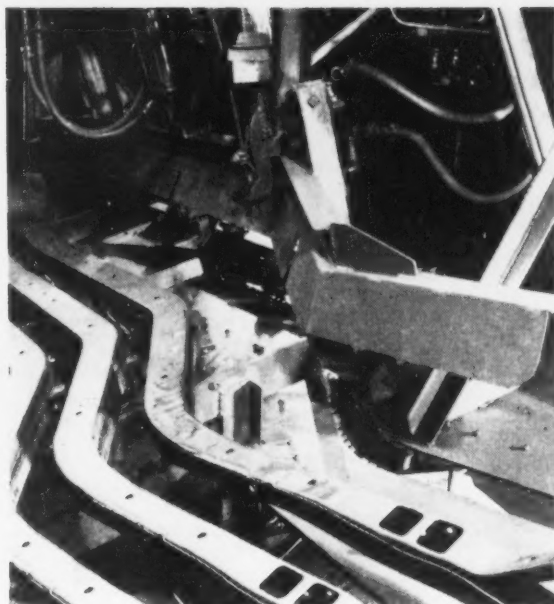


FIG. 6—After welding, spring-wire teeth remove the fused flux in a descaling fixture. The fused flux drops through a trough, is conveyed to a recovery unit, crushed, graded for particle size and re-used.

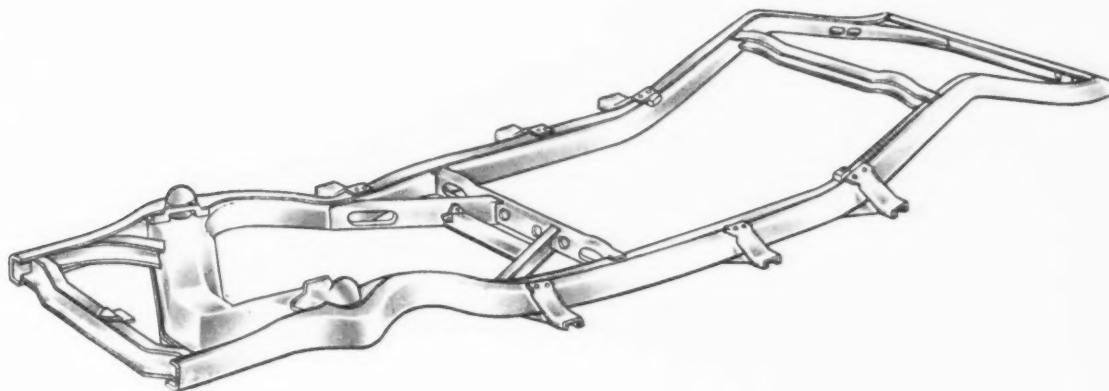


Fig. 7—Completed frame assemblies, such as shown above, are twisted and vibrated severely to test the strength of machine welds. Under the terrific strain, crossmembers will break but welds will not fracture.

is held rigidly in a fixture which controls the frame width, distance between body holes, height of body brackets and general contour. Expensive straightening operations have been eliminated by this procedure.

Completed frame assemblies, such as the one shown in Fig. 7, have been twisted and vibrated severely in a special machine to test the strength of the machine welds. Although crossmembers broke away from the side rails, there have been no signs of fracture along the machine welds.

Throughout the installation, every precaution has been taken to avoid the abrasive action of flux dust, particularly on moving equipment. Welding generators, located adjacent to and above the machines, are equipped with ducts and fur-

nace filters to remove flux dust from the air passing through them. Bearing surfaces on other equipment are also sealed and protected.

Automatic submerged-arc welding offers numerous advantages over manual welding of automobile frames. Output per man-hr has been increased about 5 times while obtaining superior and more uniform welds. A controlled time cycle and uniform heat input enables the frames to be held to within a  $\frac{1}{8}$ -in. tolerance at the ends—considerably less than by manual welding. Also of importance is the substantial reduction in welding repairs and overcoming the cratering problem common to manual welding. All of these advantages are gained using only 25 pct of the floor space previously required.



# TITANIUM CASTING RESEARCH

## Tests shell molded refractories



By J. G. Kura

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Titanium's consuming appetite for ordinary refractories has forced the industry to investigate new mold materials for titanium castings. Under Ordnance sponsorship, Battelle has tested many compounds. The most promising are shell molded mixtures of stabilized zirconia and fused zirconia containing 4 pct resin, and without mold washes. So far best mold wash appears to be a colloidal graphite dispersion. Good surface, and soundness of cast titanium containing only small amounts of surface contamination have been obtained.

Little effort has been placed on studies of titanium for cast applications, primarily because its great chemical reactivity in the molten state has militated against conventional foundry techniques. Even special techniques developed for the production of titanium ingots have not been readily applicable to the manufacture of castings.

In the past year, progress has been made in the development of casting processes, encouraged by the Ordnance Department through its facilities at Watertown and Frankford Arsenal. At Frankford Arsenal a process for the production of small castings which weigh less than 10 lb has been developed. This process is a modification of the conventional titanium arc furnace which utilizes the principle of skull melting for the production of small castings.

The major portion of the research at Battelle, sponsored by Frankford, has been devoted to a study of refractory materials suitable for molds. It is generally known that refractory materials are not suitable as crucibles for containing mol-

ten titanium; however, the heat for melting the titanium has always been by conduction through the crucible. This method of heating results in a higher temperature in the crucible than in the melt which results in reduction of the crucible and contamination of the metal. Time of contact between the melt and the crucible is an important factor.

In contrast to the high temperature of the crucible, mold materials are near room temperature at the time of initial contact with molten titanium. Thus, during casting, the melt forms a skin of solid metal by the chilling effect of the cold mold. While the surface of the casting is freezing, the temperature of the mold is raised; however, the temperatures are not so high that all common refractory mold materials will react.

The research program has consisted of screening mold materials by casting melts prepared under an inert atmosphere in a graphite-lined induction furnace. A diagram of this furnace is presented in Fig. 1. This furnace has the disadvantage that the titanium melts are contami-

nated by carbon. However, in the preliminary screening of mold materials, the carbon-bearing titanium can be tolerated.

The promising mold materials later will be given a critical evaluation by casting contamination-free melts prepared in a skull, arc-melting furnace illustrated schematically in Fig. 2. This latter unit is a further modification of the furnace used at Frankford Arsenal and permits two castings to be made. This is accomplished by melting into the skull and tilting the unit in one direction, and then melting into the remaining skull and tilting in the opposite direction. Construction of the furnace is nearing completion.

Considerable progress in development of mold materials has been achieved in the induction furnace. A cylindrical step casting weighing 1 lb was used to study the effect of section size on mold reactivity. The sections of this casting varied from  $\frac{1}{8}$  in. to 2 in., as illustrated in Fig. 3.

Graphite, copper, and aluminum were evaluated as possibilities for permanent molds. Graphite, preheated to 1000°F to remove moisture and other volatile material, produced smooth, bright castings. However, the high hot strength of titanium resulted in crushing and cracking of the corners at re-entrant angles of the mold which may limit the use of graphite permanent molds to casting designs of very simple shapes.

Copper and aluminum molds produced a very smooth surface finish. However, it was quite

difficult to produce a good surface consistently, because of the severe chill effect of these metal molds as compared with graphite. Superheating the melt to overcome the chill effect of the metal molds, and thus to avoid the formation of folds in the casting, invariably resulted in partial solution of the mold surface, especially where the pour impinged on the mold. Copper molds resisted this solution better than the aluminum molds.

Because of the apparent limitations of likely permanent-mold materials, a study was made with shell molds. The various refractory materials listed in Table I were investigated. The shell molds were prepared from a mixture of the refractory mold material desired, Borden Thor-Resin (MCF-278), and light oil which was added to prevent segregation of the resin. The amount of resin used depended upon the density and particle-size distribution of the mold material. However, the amount of resin was kept to a minimum to decrease the quantity of gas formed by the decomposition of the resin during casting.

The photographs in Figs. 3, A to D, inclusive, illustrate the cast surfaces obtained with these shell molds. Castings in silica shell molds were very poor, and the addition of graphite to the silica did not improve the surface condition, Fig. 3-A. The silicon-carbide mold was completely reduced by the titanium melt. Castings made in stabilized zirconia, fused magnesia, and fused

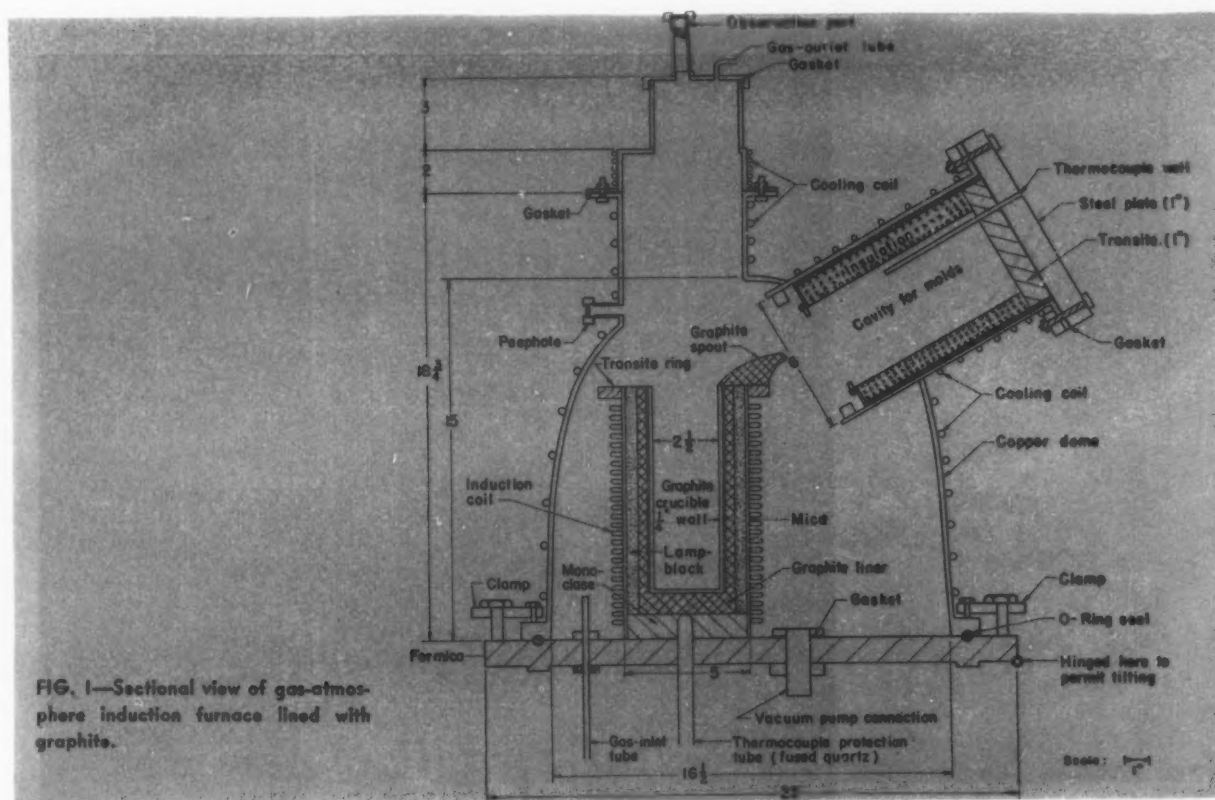


FIG. 1—Sectional view of gas-atmosphere induction furnace lined with graphite.

**"Shell molds made from stabilized zirconia and fused zirconia had fewest pinholes . . ."**

alumina were very similar in appearance to the casting made in fused zirconia, Fig. 3-B. Fused zirconia produced the least amount of pinholes in any of the castings. The rough spots in the casting illustrated in Fig. 3-B were caused by segregation of the resin during the molding operation. The castings in Figs. 3-C and 3-D show the improvement in surface finish that can be effected by adding some powdered zirconia to a zircon shell mold.

At first, fused zirconia (minus 80 mesh) was used with the as-received grain distribution. The large quantity of fines present required an excessive amount of resin to provide adequate strength in the shell mold, and the poor grain distribution resulted in a very rough finish on the casting. Removal of most of the fines to produce a favorable grain distribution permitted molding with 4 pct resin and produced the smooth finish illustrated in Fig. 3-B. Table II presents the grain distribution of some of the mold materials that yielded a satisfactory finish.

Titanium does not differ from other cast metals in the effect of grain distribution of the mold on surface finish of the metal. However, variation in grain distribution did not have a marked effect on the amount of pinholing in

titanium castings, provided the amount of resin binder present was about the same. When 10 pct powdered zirconia was added to a zircon shell mold, the casting had fewer and smaller pinholes. Shell molds made from stabilized zirconia and fused zirconia had the fewest number of pinholes. Cooling the molds to room temperature prior to pouring did not reduce the amount of mold reaction. The casting still had pinholes

TABLE I

**SHELL-MOLD MATERIALS**

Mold Material	AFS Grain Fineness No.	Content of Resin Binder, Wt pct
Silica	131	6
Silica + 10 pct graphite	131	6
Silicon carbide	69	4
Stabilized zirconia	108	3
Electrically fused zirconia	134	4
Electrically fused magnesia	69	4
Electrically fused alumina	157	3
Zircon	132	3
Zircon + 10 pct zirconia	150	3

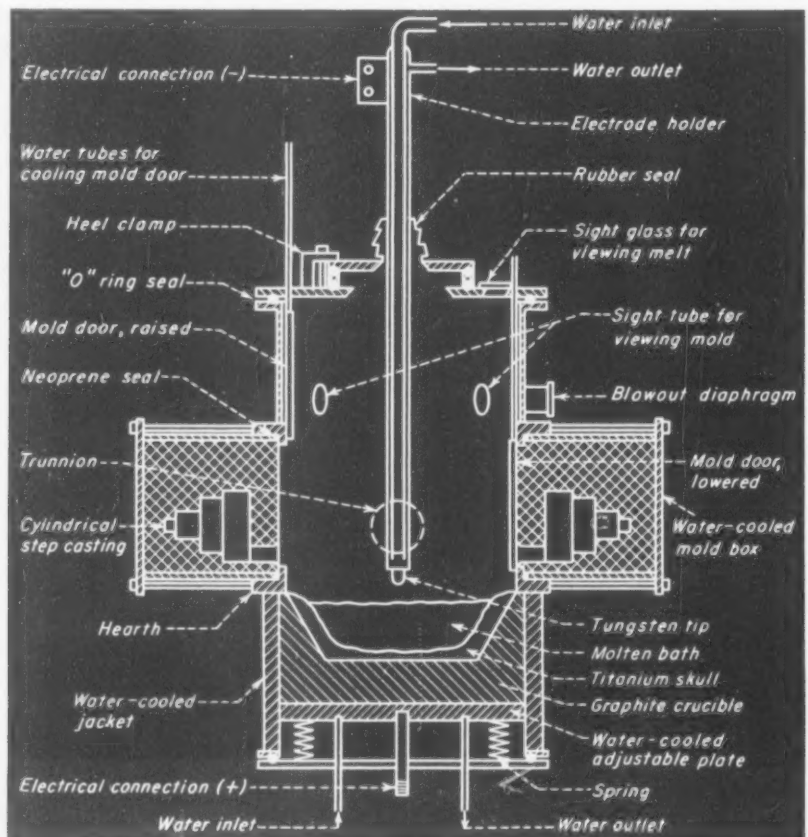
TABLE II

**SCREEN ANALYSIS OF SHELL MOLD MATERIALS**

Screen Size	Amount on Screen, Weight Per Cent			
	Fused Zirconia	Zircon*	Fused Magnesia	Fused Alumina
20	—	—	—	—
30	—	—	—	—
40	—	—	0.2	—
50	—	—	21.4	—
70	3.0	—	26.4	—
100	22.7	2.6	29.3	2.1
140	27.2	30.7	18.7	35.2
200	22.6	55.7	3.8	31.9
270	16.0	10.4	0.2	16.8
Fines	8.5	0.6	—	14.0

\* 10 pct powdered zirconia added later to prevent mold reaction.

FIG. 2—Schematic of the tilting arc melting furnace which can pour two castings per cycle.





## Shell Molded Titanium Casting Tests

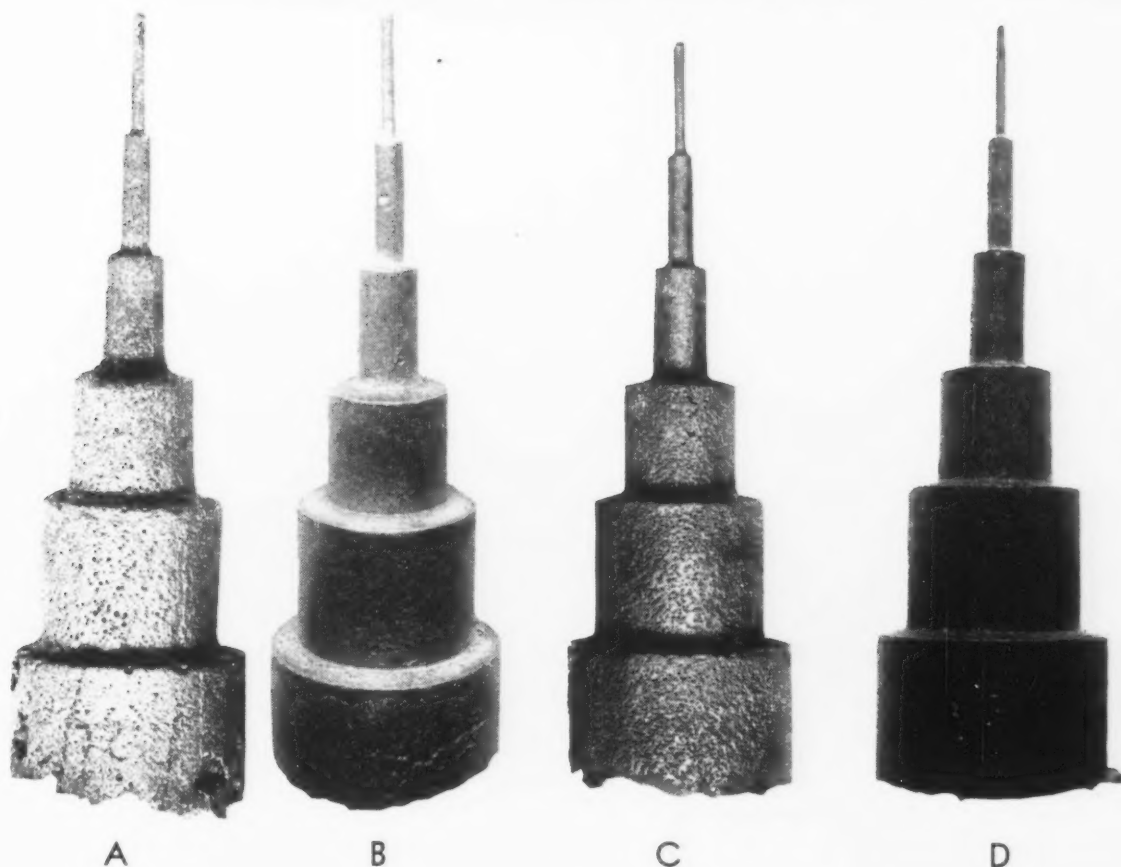
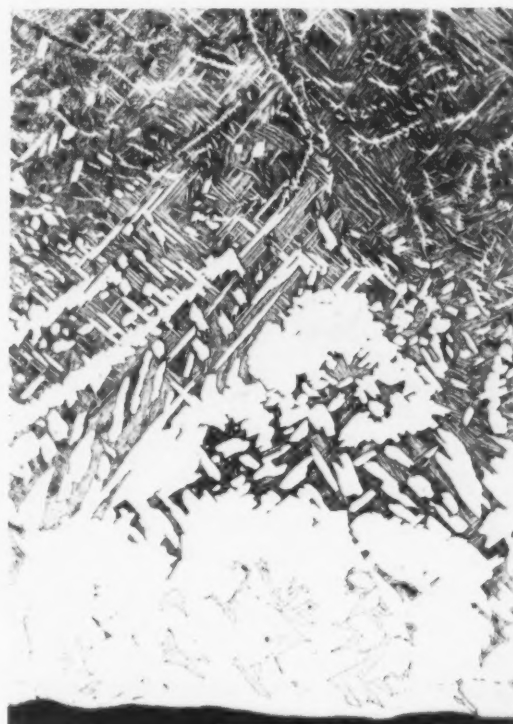


FIG. 3—Surface of cast test resulting from various shell mold compositions. A—silica plus 10 pct graphite mold preheated to 200°F; B—electrically fused zirconia, preheated to 450°F; C—zircon, preheated to 300°F; D—zircon plus 10 pct powdered zirconia, preheated to 450°F prior to pouring.



A—As Cast



B—Heat Treated

FIG. 4—Photomicrograph of a 1 in. titanium section cast into a fused magnesia shell mold before and after heat treatment. After 3 hrs at 1830°F in an argon atmosphere sample at right was water quenched. Etch: 2 pct HF. 100X.

**"Castings were smoother and had better detail than castings made in unwashed silica molds . . ."**

and, in addition, developed large folds. Work with nongassing binders as a substitute for the resin binder appeared promising, but data are not yet available.

Because silica is much less expensive than zirconia, some tests were made with washes on silica shell molds to prevent the titanium-silica reaction. The best wash found was a colloidal graphite dispersion, Dag Dispersion No. 22. Although the cast surface was quite rough, it had very few pinholes.

Other washes tested were plumbago, powdered titania, powdered zircon, and stabilized zirconia

TABLE III  
DEPTH OF SURFACE CONTAMINATION

Mold Material	Depth of Contamination, In. Section Diameter, In.		
	1/2	1	1 1/2
Fused magnesia	0.002	0.004	0.006
Fused zirconia	0.004	0.006	0.008
Stabilized zirconia	0.003	0.006	0.010
Silica washed with colloidal graphite	0.004	0.008	0.012
Silica washed with stabilized-zirconia fines	0.006	0.012	0.014
Silica washed with powdered titania	0.008	0.010	0.014
Zircon + 10 pct powdered zirconia	0.010	0.010	0.012
Silica washed with powdered zircon	0.010	0.018	0.022

fines. With one exception, the castings were smoother and had better detail than castings made in unwashed silica molds, but all exhibited large pinholes at the shoulders of the thicker sections of the casting. The casting made in the silica mold washed with plumbago was not much better than the casting made in the silica mold with no wash.

A metallographic technique was employed to measure the depth of mold contamination in titanium castings. As shown in Fig. 4-A, a cross section of a titanium casting reveals a difference in structure between the edge and the center of the casting. It is apparent that the depth of con-

tamination cannot be measured by this technique. By covering the section with titanium chips and heat treating it in an argon atmosphere at 1830°F for 3 hrs, the depth of the contaminated layer is delineated clearly enough for accurate measurement. The photomicrograph, in Fig. 4-B, of a heat-treated section reveals the contaminated layer. This layer is now delineated because it was contaminated with oxygen from the mold, which raised the transformation temperature of the titanium. During heat treatment, the interior of the casting transformed to beta while the case remained as alpha titanium. When the specimen cooled, the case remained in the alpha form and the beta transformed to alpha giving the typical basket-weave structure.

The depth of surface contamination in some of the titanium castings examined are listed in Table III. Numerous tests had shown that the 1 1/2 and 2-in. thick sections were contaminated to about the same depth, and that the 1/8 and 1/4-in. thick sections were virtually uncontaminated. Therefore, Table III presents data for only 1/2, 1, and 1 1/2-in. thick sections. The significance of the amount of surface contamination on the serviceability of titanium castings has not yet been evaluated.

The problem of finding mold materials suitable for making titanium castings does not appear to be beyond solution. Special techniques will be required in molding, melting, and pouring. Additional research should not only make possible the production of commercial castings in the very near future, but should also lead to more economical methods.

#### Acknowledgments

The author expresses his appreciation to Frankford Arsenal for permission to publish the results obtained on the work sponsored under Contract No. DA-33-019-ORD-223. Acknowledgment is also given to Messrs. O. Simmons, H. Markus, R. M. Lang, R. D. Reising, J. H. Jackson, and Lt. Col. D. J. Murphy under whose supervision the work was conducted.

## NEW BOOKS

*"Permutit Water Conditioning Data Book."* Enlarged and revised, this pocket book presents 77 useful engineering tables. Hydraulics, water impurities, chemical conversions, alkalinity relationships and chemical reactions are a few of the subjects covered. The Permutit Co., 330 West 42nd St., New York 36, 116 p. Request.

*"Physical Metallurgy for Engineers,"* by D. S. Clark and W. R. Varney. Subjects normally handled in texts on metallurgy for engineering students are presented. The book, however, is considerably more complete in development of subject matter. D. Van Nostrand Co., Inc., 250 Fourth Ave., New York 3. \$6.50. 567 p.

*"Extension and Dissemination of the Electrical and Magnetic Units by the National Bureau of Standards,"* by Francis B. Silsbee. Gives an over-all picture of the sequence of measuring processes by which a self-consistent system of electrical units is built up in the laboratories of the National Bureau of Standards. Starting with the ohm and the volt, as maintained by groups of standard resistors and cells, the circular describes experimental processes by which the other electric and magnetic units (farad, henry, ampere, watt, joule, gauss, and oersted) are derived. Circular 531. Government Printing Office, Washington 25, D. C. 25¢. 33 p.

## New Layout,

## better equipment improve plant hospital

**W**hen Bucyrus-Erie Co., of Erie, Pa., recently streamlined its industrial relations department, a new layout for its plant hospital was needed.

The model hospital, incorporating several novel features, has simplified handling of practically all types of work-incurred injuries. Examination of new employees is also easier. The company's 1100 employees work 3 shifts turning



CONTOURED ARMREST of homemade table in Bucyrus-Erie's new plant hospital provides firm rest for patient.



HEAVY PLYWOOD was used in building this cupboard for storage of medicants and other supplies.

out B-E's line of heavy power shovel equipment.

Hospital areas are divided into the main working room, about 14 x 32 ft, and several private side rooms, each roughly about 8 x 8 ft. These are equipped with beds, and doctor's examining quarters. At north and south ends, the hospital has entrances off the plant personnel department, and the plant proper.

Entrance to the hospital from the plant features a 6 x 6 ft reception or waiting area, with several comfortable chairs. Swinging doors enable the nurse to keep track of waiting personnel.

A neat, plant-made dressing table measures 30 x 40 x 33 in. The plywood table has an easily cleaned, wear-resistant Formica top. At each end of the table are heavy contoured arm rests. This gives the patient a good support while the nurse cleans and dresses the wounds.

Both ends of the dressing table have metal chute openings. These permit waste to be dropped into paper bags. Other compartments and drawers give ready access to bandages, adhesive tape, medicants and equipment.

At one end of main hospital room, a heavy plywood cupboard was built against the wall. Deep drawers for storage of clean blankets and other hospital materials are hidden by sliding doors when not in use. Shelves of upper cupboard hold a variety of medicants and supplies.



PLENTY OF ROOM below work table permits easy access to equipment. Waste drops through chute into paper bags.



# New Lubricant IMPROVES DIE LIFE, AND FINISH

By W. E. Curtiss

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In drawing a 6.5-in deep, 3-in diam shell from 0.065 annealed blanks of 1010 steel considerable difficulty was encountered in the fourth and final draw. Hard chrome-plated dies had extremely short life and pick-up on the dies caused scuffing and scratches on the shells. Use of Metalloid X-60 as a die lubricant increased the number of pieces per dressing from 1,000 to 11,800 with the same dies. Improved surface finish was achieved. Output was increased with no changes in setup, feeds, speeds and lubrication methods.

**D**ifficulty in drawing 6.5-in. deep, 3-in. diam shells from 0.065 annealed blanks of 1010 steel was encountered by the Enterprise Aluminum Co., Massillon, Ohio, because of extremely short die life and pick-up which caused scuffing and scratches on the shells.

Due to the small diameter and lightness of the stock in relation to the draw depth the job was set up for a four-draw operation using conventional hard chrome-plated dies. No trouble was encountered on the first three draws. The initial draw was made with 10<sup>1</sup>/<sub>8</sub>-in. circular annealed blanks. Blanks were lubricated by dipping in a drawing compound. This one dip sufficed for the first two draws.

After the second draw the shells were annealed, then degreased to remove grit and dirt. They were again dipped in lubricant before the third draw which was made on a 145-ton press.

The final draw, which brought the shell to its 6.-in. depth, was the one which caused the engineering department considerable difficulty. It was performed on a double action 170-ton toggle press with a standard 14-in. stroke. Drawing speed of the operation was 29 fpm. Production was limited to no more than 800 to 1000 pieces before the chrome would wear off or welds would form.

Not only was considerable production lost, but operators working on an incentive plan could work only about two hours before a die would spoil and they would have to stand idle while it was polished. Down time was estimated at about 25 pct for time taken to rub off pick-up or to refinish the dies. Refinishing of dies ran around \$35.00 to \$40.00 per set.

Various types of die lubricants were tried with no improvement in finish or die life until a change was made to Metalloid X-60 produced by the Metalloid Corp., Huntington, Ind. Tests indicated that pick-up and scuffing were considerably reduced when this die lubricant was used, as compared with other lubricants tested.

The lubricant was applied in the same manner as described above and the same press speed of 750 pieces per hour was maintained. Since changing to Metalloid X-60, pieces per die dressing have increased from a maximum of 1000 to 11,800 shells with the same dies. The company estimates several thousand more pieces would have been obtained had not the dies used in the fourth draw been sent to the die shop when the third draw dies broke down. The 25 pct down time formerly occurring on this operation has been reduced to less than 5 pct and is said to result from factors. Pick-up has been eliminated

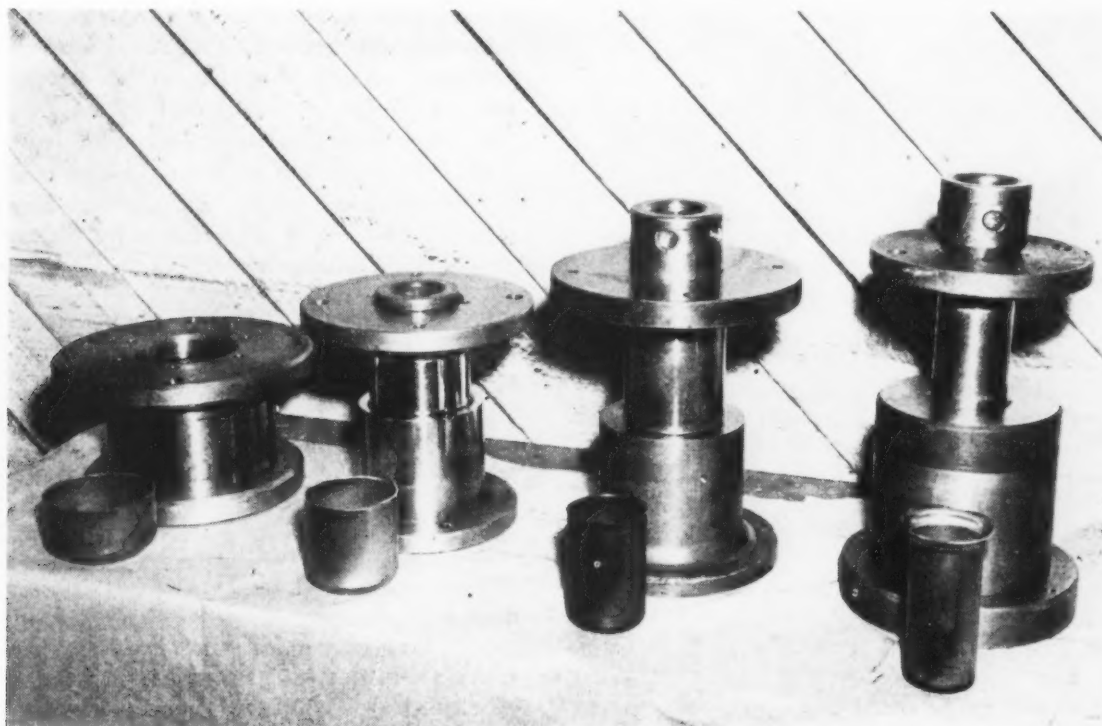


DRAWING SEQUENCE is shown above. Shells are made from 10  $\frac{1}{8}$  in. circular annealed blanks and drawn to full depth in four stages. Note finish on last shell with use of Metalloid X-60.

and surface finish is greatly improved. The lubricant is being used in a 50-50 dilution with a paraffin oil base.

Dipping of the part in the lubricant is believed to impart easier and more effective die lubrication than is possible by other means. Enterprise Aluminum is inclined to accept Metalloid Corp.'s

Dynatronics heat-limiting theory because of the absence of welds and the increased life of the hard chrome finish. The company claims the lubricant has effected a 20 pct increase in shell production. These advantages have been gained without changes in setup, feeds, speeds or lubrication procedures.



DIES, PUNCHES and blank holders used in the four stage deep draw of 3 in. by 6.5 in. shells. Use of heat-limiting die lubricant eliminated pickup and greatly increased production.

# SPECIAL

## steel piercing methods

# APPRAISED



By A. Williman  
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Lecturer in Engineering  
University of California  
Los Angeles

In production of oil, it is often necessary to perforate well casing to increase oil seepage from oil bearing strata. Two tools commonly used are the bullet and jet perforators. The bullet method projects a powder propelled steel bullet through the casing. The jet method makes use of the lined shape charge phenomenon. Fig. 1 illustrates the methods of detonating bullet and jet charges.

In this experiment, both bullet and jet were shot through two different steels, the first a soft and the other a high manganese steel casing. Photomicrographs were made through the cross sections of the perforations. Changes in microstructure of the high manganese steel casing due

To increase oil seepage from adjoining oil strata, oilmen sometimes pierce oil well casings. Two methods are used—a bullet and a jet charge. Typical holes and what happens to adjoining metal structure were studied. Samples of high manganese steel casing and low carbon SAE 1020  $\frac{3}{8}$ -in. steel plate were used. The bullet perforation leaves a clean hole of constant diameter. The jet perforation leaves a rough jagged hole. Changes in microstructure were not as apparent in the high manganese steel. Residual stress near the perforations was very high.

to the two methods of perforation were not as apparent as for the SAE 1020 steel plate. To better illustrate differences between bullet and jet perforations, changes in microstructure, hardness and apparent stress level of the SAE 1020  $\frac{3}{8}$ -in. plate used for the tests were studied.

Four specimens were obtained from the laboratories of B. J. Service, Inc.—two of low carbon soft steel and two of high manganese hard steel. One specimen of each steel was perforated with a  $\frac{1}{2}$  in. steel bullet and the other specimens of each steel perforated by means of a copper lined conical shaped explosive or jet.

Each specimen was cut into four parts through the perforation and each part cut into an approxi-



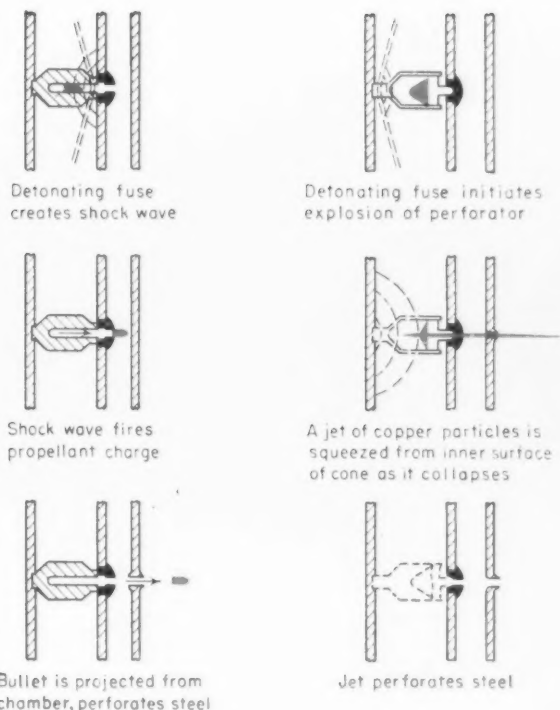


FIG. 1—Two methods of making holes in oil well casing to gain oil seepage are by bullet, left, and jet perforation.

mate square with the perforation at one corner, Fig. 2.

Surface A and B were surface ground until smooth parallel faces were obtained, the parallel base being necessary to keep the surface level under the microscope lens. Hardness traverses were made on SAE 1020 steel plate from edge of perforation to the unstrained region. Tukon hardness tester with Knoop indenter and 500g load was used. Results are shown in Fig. 3.

Structures of SAE 1020 for bullet and jet perforations at various magnifications are shown in Figs. 4, 5, 6 and 7. The bullet perforation leaves a clean hole of constant diameter whereas

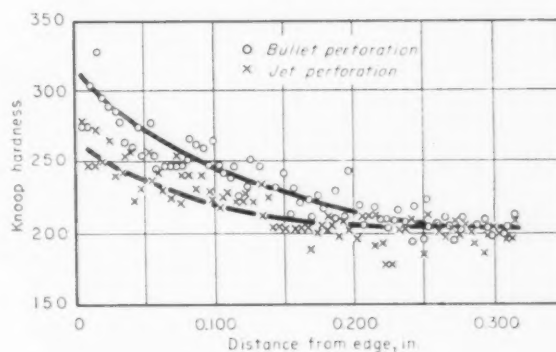


FIG. 3—Knoop hardness readings, 500 kg load.

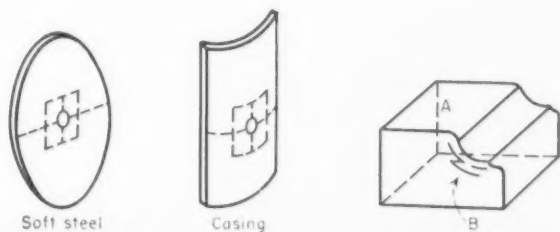


FIG. 2—Sections of casing and steel plate were quartered and ground to study effects of each perforation method.

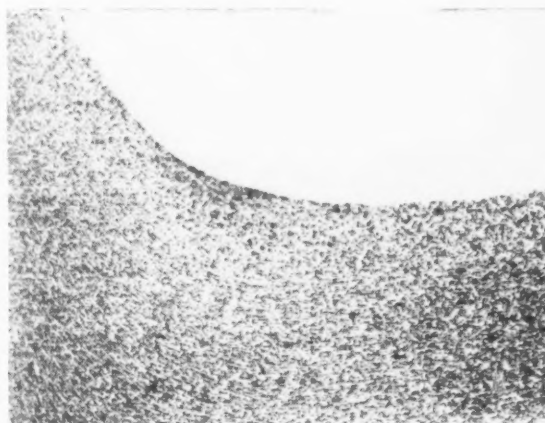


FIG. 4—Distortion of grains at edge of hole, left, is shown in micrograph of SAE 1020 3/8-in. plate pierced by bullet. 8X

**"Pressure exerted by the particles . . . on the target approaches 250 atmospheres . . ."**

the jet perforation, Fig. 6, leaves a rough and jagged hole of varying diameter, which is smaller at the entrance. The jet hole is made by particles which travel approximately 30,000 fps. Pressure exerted by the particles impinging on the target approaches 250 000 atmospheres. Difference in the velocities between the bullet and the jet is evidenced by differences in hardnesses near the perforations, Fig. 3. No satisfactory explanation for this difference in hardnesses can be advanced at present.

An effort was made to measure residual stress by X-ray diffraction techniques. X-ray photographs near the perforations revealed diffused lines which could not be evaluated accurately. However, from these photographs it can be concluded that the residual stress near the perforations was very high. This fact is substantiated to some extent by the hardness gradient.

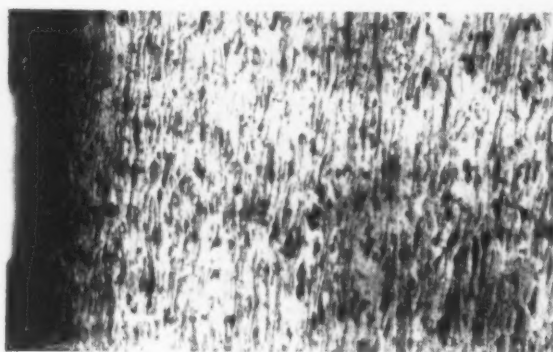


FIG. 5—Magnified view of Fig. 4 showing grain structure. Edge of hole is at left side of photomicrograph. 250X

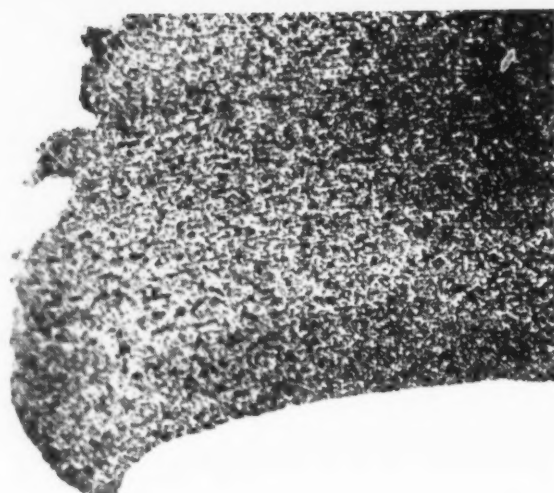


FIG. 6—Microstructure of SAE 1020  $\frac{3}{8}$ -in. plate penetrated by jet charge. Note grain distortion at hole edge, left.

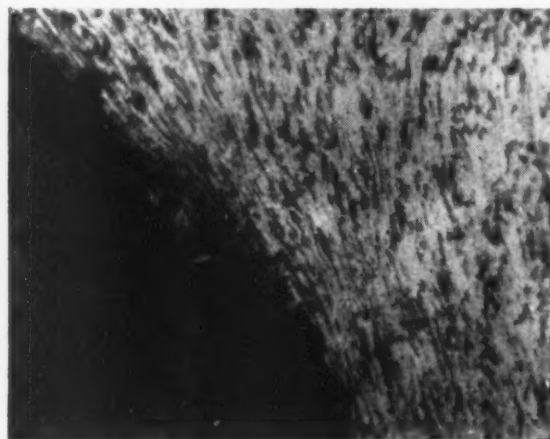


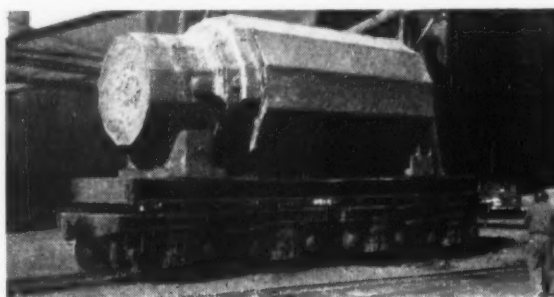
FIG. 7—Enlarged view of section taken from Fig. 6. 250X. Edge of hole is at left.

## 336-Ton Ingot Cast for Big Forging Press Column

A special 4-truck, 16-wheel car was built recently to handle one of the largest ingots ever cast in the United States. The big 336-ton ingot, poured and forged at the Midvale Co.'s plant in Philadelphia, will be made into a column for a 25,000-ton forging press now being built by Baldwin-Lima-Hamilton Corp., of Philadelphia. A second casting has been poured and will be used for the same purpose.

The special car moved the out-size ingot from the openhearth to the forge shop at Midvale. The 24-ft, 8-in. ingot has a 116 in. mean diameter with a dodecagon cross-section. Weight of the cast iron mold used is 283 tons. After forging, the ingot will be heat treated and machined at the Midvale plant. The first ingot has already

been forged into a 75-in. octagon, is 400 in. long, and the tong holders have been cut off.



THREE ONE-HUNDRED TON OPENHEARTHS and one 50-ton electric furnace were used to supply melt for the big ingot. All furnaces were tapped at about the same time. Pouring time was about 1 hr and 45 min.

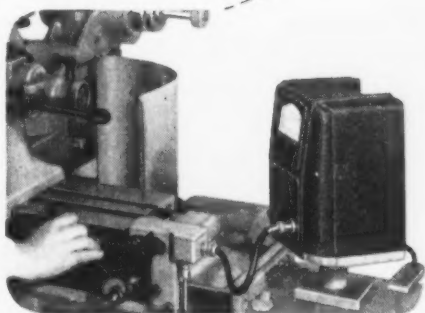
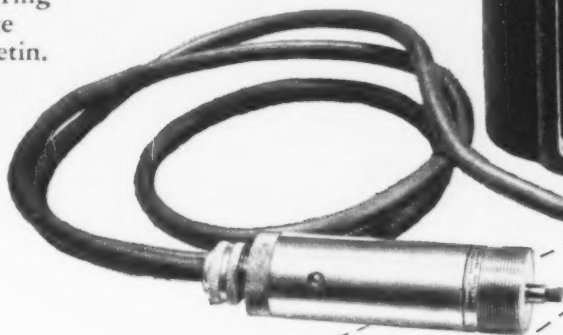
# Build "tenths of tenths" measuring into your equipment

Brown & Sharpe Electronic Amplifier No. 950  
for .0001" to .00001" readings. Gage Head  
Cartridge No. 953 is plugged in.

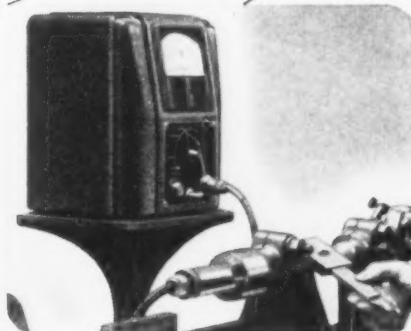
Versatile Brown & Sharpe Electronic Measuring Equipment is easily adapted to your machine or fixture design. It provides fast, accurate setting or gaging to .00001" *with human error practically eliminated.*

An outstanding advantage is the separate amplifier unit which isolates heat-producing elements, preventing temperature drift in gaging units. It's economical, too — you can design inexpensive Gage Head Cartridges into several fixtures and use the same amplifier for all of them. True linear response of the amplifier eliminates the need for "go" and "no go" masters — just "zero" the pointer on initial set-up and read variations directly from the accurately graduated dial.

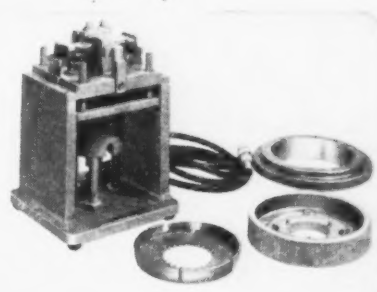
These are but a few of the many advantages of Brown & Sharpe Electronic Measuring Equipment. Write for detailed Bulletin. Brown & Sharpe Mfg. Co., Providence 1, R. I., U. S. A.



**Electralign** — an application of this precision electronic equipment in Brown & Sharpe's own grinding machines. Permits fast, accurate setting of swivel table for precision grinding straight work or exact tapers after a single trial grind.



Gage Head Cartridge No. 953 mounted on fixture to measure a fixed gage . . . used with Amplifier No. 950. Standard comparators for external or internal measuring also available.



Special fixture utilizes Gage Head Cartridge and Amplifier to measure internal angle accuracy to  $\pm 1\frac{1}{2}$  seconds independently of bore size and without reference to locating surface.

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## Technical Briefs

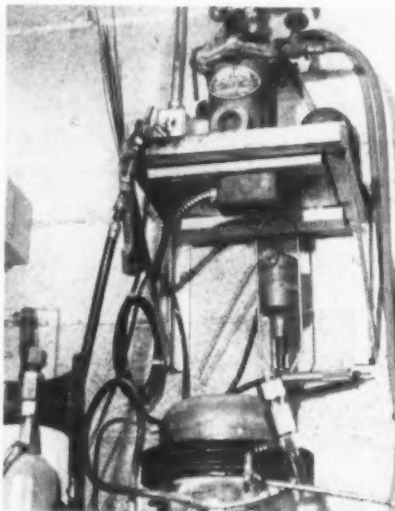
Engineering

### BRAZING:

**Flux-in-flame gives better joints  
lowers rebuilding cost.**

Lower costs and superior joints are reported by a rebuilder of refrigerators through use of a flux-in-flame arrangement which insures the proper amount of flux at the joints to be brazed.

During rebuilding operations trouble with leaks in brazed joints was experienced. A silver brazing alloy with a more plastic range was found to be not so fluid and permitted a small fillet around the joints, making them stronger—provided there were no flux inclusions. Improper fluxing caused much trouble.



FLUX IN FLAME proved answer to brazing problem in repair of refrigerators. Better, cleaner joints resulted through use of Gas-fluxer installation.

**Wasted**—Paste fluxes diluted with water were used too thickly. This wasted flux, made cleaning before painting difficult and caused numerous flux inclusion holes. Fluxes diluted to a proper consistency gave better brazed joints and fewer leak rejects.

The Gasflux method of passing the fuel gas for the torch through a flux container so that the flux is picked up in a controlled amount and passed into the torch flame gave best results.

A satisfactory procedure for use with both silver alloy and the

### IF YOU WANT MORE DATA

**You may secure additional information on any item briefed in this section by using the reply card on page 63. Just indicate the subject heading and the page on which it appears.**

phosphorus-copper alloy was developed. It had no effect on soft soldering applications where these operations were performed at the same stations along with silver and phosphorus-copper alloys.

**Prevents Oxidation**—The flux-bearing flame can be used to coat the entire heat-affected area with flux and thus prevent oxidation and preserve the good working properties of the metal.

In use, as the material reaches the proper heat, the brazing alloy is touched to the fluxed joint area. After it flows throughout the joint the flame is slowly withdrawn. Joints are clean and strong. On copper-to-steel connections penetration depended upon the amount of fluxing in the initial stage of application of heat.

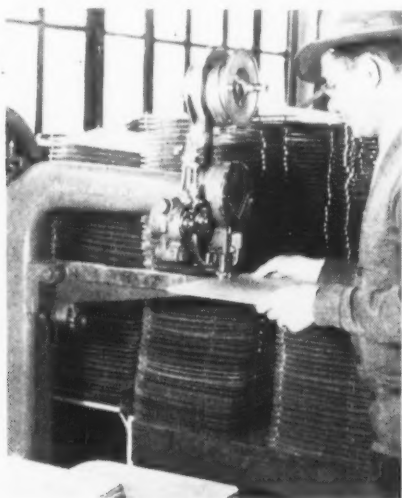
**Fewer Leaks**—Since using the flux-bearing flame the amount of brazing alloy used has been reduced and leaks have been cut more than 60 pct. Stronger joints through better alloying action of the brazing materials with the base metal have resulted.



## WIRE STITCHING:

Special stitch developed for fast assembly of seat frames.

A novel wire stitching machine with a special stitch solved an unusual assembly problem for Durham Mfg. Corp., of Muncie, Ind. The method economically and rapidly fastens a padded and uphol-



CHAIR SEATS are assembled with wire stitching machine which clinches only one leg on each stitch. Second leg passes through metal frame and is clinched after upholstery is added.

stered fiberboard to a metal seat frame for a line of folding chairs.

Manufacturing requirements required the fastening device be secured to the fiberboard, padding and upholstery applied, the completed seat be placed in and secured to the metal seat frame.

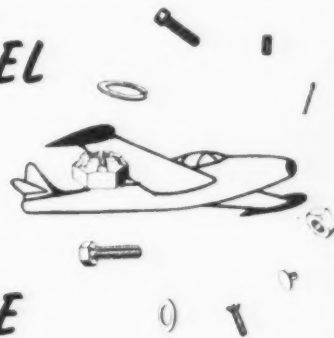
**Standard Machine**—Engineers of Acme Steel Co., Chicago, developed a special stitch by adapting a standard wire stitching machine. The stitch features a radial cutoff on one leg of the staple. And at the time of stitch placement in the fiberboard, only one leg is clinched.

After padding and upholstery are added, the unclined leg of each stitch is placed through a punched hole in the metal seat frame. Upon completion of the assembly, stitch legs projecting through the metal seat frame are clinched on a pneumatic jig.

Turn Page

October 30, 1952

## When you think of STAINLESS STEEL FASTENINGS think first of ANTI-CORROSIVE

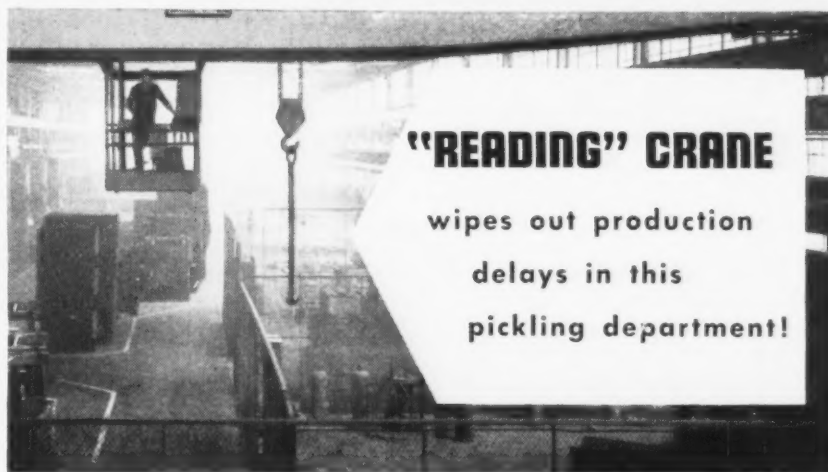


Anti-Corrosive has millions of stainless steel fastenings in stock for immediate delivery . . . plus exceptional production capacity that can fill your requirements beyond stock items faster, better!

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IN FASTENINGS OF  
STAINLESS STEEL**



## "READING" CRANE

wipes out production  
delays in this  
pickling department!

A prominent producer of automobile frames found production slipping. Figuring it was due to inefficient load handling equipment in his pickling room, he called in a "Reading" handling engineer.

After installing a 10-ton "Reading" overhead traveling crane he found his problem solved. Now the operator simply pushes a button. The motorized crane, traveling 400 feet per minute, does all the work.

Employee morale is higher because fatigue is eliminated. And the extra efficiency obtained resulted in improved production.

Further information on "Reading" Electric Cranes will enable you to judge their advantages for your own load handling operations. Get our latest 16-page bulletin, "The Why and How of Faster Production. Write to:



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# READING CRANES

## RESISTANCE WELDING:

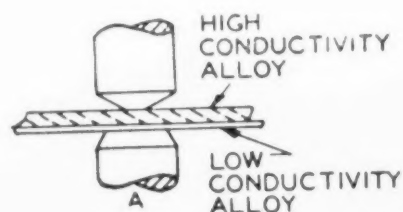
Engineering and welding data simplifies some shop problems.

Careful collection and simplified presentation of data on engineering, mechanical and metallurgical problems connected with resistance welding has been made in an unusual booklet. Prepared by the Weldaloy Products Co., the material is concisely arranged for ready reference.

**Buckling Problems** — Data are included on the pressure required to eliminate buckling when changing from one thickness of mild steel to another. Techniques are also shown for obtaining proper heat balance when a high-conductivity alloy is spot welded to a low-conductivity alloy.

Various methods are shown to control heat shrinkage and electrode indentation where good surface appearance is important.

**Welding Conditions** — Machine settings are given for spot welding of aluminum, copper, lead and magnesium and their alloys. Important information for successful welding accompanies these tables. Data are also included for spot welding low carbon and hard-



SMALLER TIP AREA of electrode assures correct heat balance with the copper alloys. Method helps eliminate buckle.

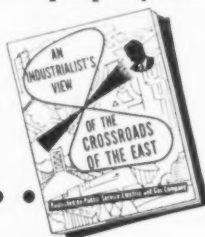
## What's New in New Jersey



The significance of the zero you see here is that it represents the fact that in New Jersey there is *no* state sales tax . . . and there is *no* state income tax. That's news in these days of soaring taxes.

What's the result? Today many *new* industries are considering plant locations in New Jersey, the Crossroads of the East, where the taxation climate is favorable to industry. Here are real advantages to all business — large and small — because here there is *no* individual state income tax . . . *no* state corporation income tax . . . *no* state sales tax . . . and complete exemption of intangible personal property from local property taxes.

Want to know more about the news in New Jersey which affects all industry? Write Box D, 70 Park Place, Newark, N. J. for the brochure, "An Industrialist's View of the Crossroads of the East."



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"Let's forget about the old circus days, Kenworthy."



## TAPE SAVES TIME:

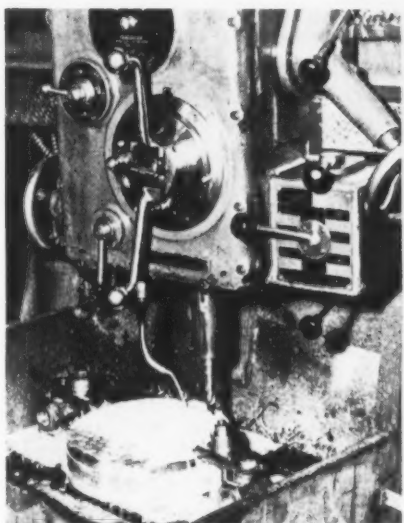
**Drilling operation speeded by solving chip problem.**

A new technique with pressure-sensitive masking tape—protecting templates during drilling—has cut production costs and man hours at Ross Heater Div. of Kewanee — Ross Corp., Buffalo, New York.

**Labor Savings** — Savings on drilling template making, and elimination of long machine tie-ups, were reported. In addition, template



**MASKING TAPE** helped cut costs of drilling steel plates and permitted longer template life at Ross Heater, Buffalo. Applied to template before drilling, it keeps chips out of drilled holes.



**FEWER OUT-OF-ROUND** holes result when tape prevents chip interference with drilling. Formerly steel particles were laboriously removed with magnet and pick.


life has been increased 300 pct.

**Tape Protects**—The firm—manufacturers of heat exchangers and condensers—is using 6-in. wide strips of masking tape to protect the templates. It is applied solidly across the multi-holed top surface of each template, and rubbed with a colored crayon to outline the holes underneath.

While holes are bored in the

steel plate below the template, the resulting chips and slivers collect on the taped surface, and are merely brushed away before the next hole is drilled. Tape is made by Minnesota Mining & Mfg. Co.

**Chip Handling**—Formerly, chips and slivers would spray up and fall into the template's other, unprotected holes. Chips were laboriously removed with magnet and pick.




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COST  
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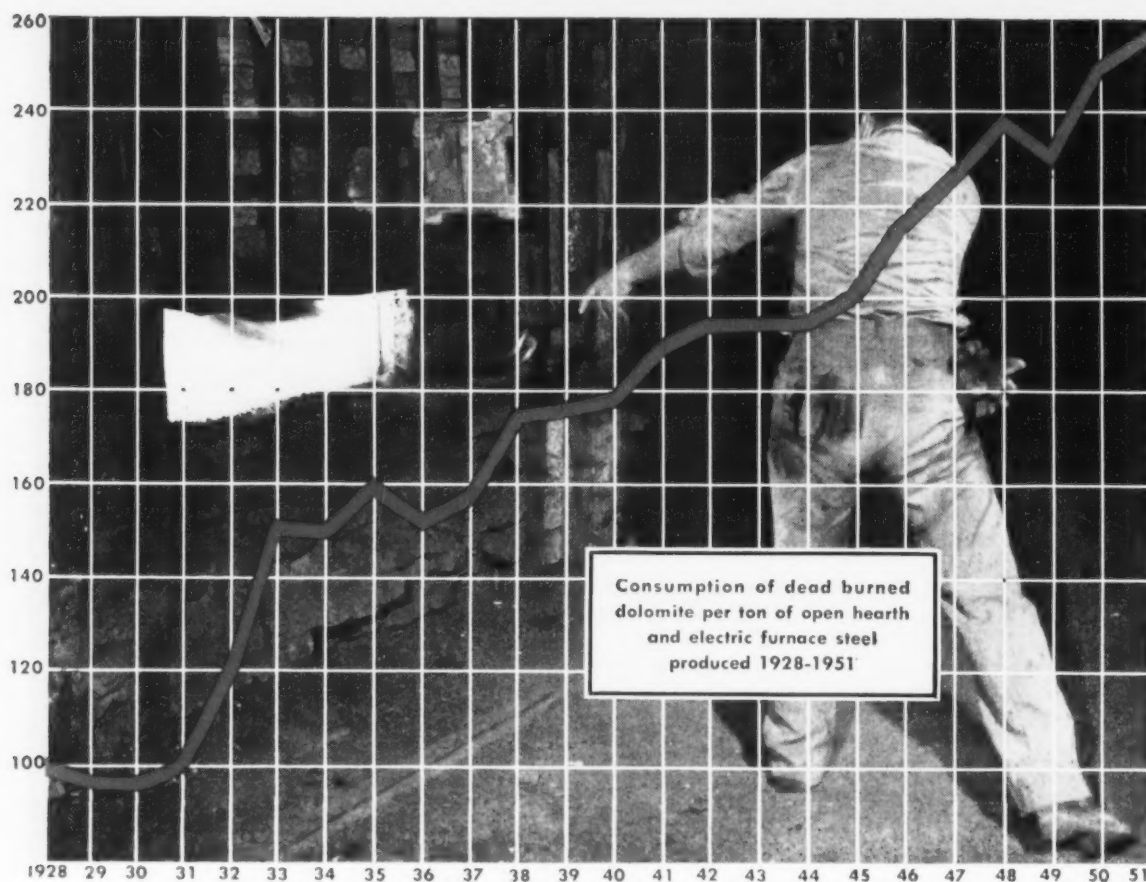
**SERVING THE STEEL INDUSTRY FOR OVER 30 YEARS**

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## raw dolomite vs. dead burned dolomite

**R**AW dolomite is without peer for routine "drying" of open hearth bottoms and is useful for banking doors and making up banks over the line. However, for bank and bottom maintenance, most operators have concluded that despite its low price raw dolomite is not a low cost refractory.

The difference in price between dead burned dolomite and raw dolomite is essentially a reflection of the difference in the amount of work performed on the two products by the supplier. The increase in refractory value exceeds the increase in price because of characteristics imparted to dead burned dolomite during processing.

To obtain the oxides of calcium and magnesium, the desired refractory constituents, dolomite must be calcined to drive off carbon dioxide amounting to about 50% of its weight.

In the case of dead burned dolomite fuel for calcination is provided by the manufacturer, whereas with raw dolomite it is supplied by the steelmaker. The average lime kiln uses about 10,000,000 BTUs to produce a ton of calcined product. Thus in making a 200-ton heat, an open hearth using 100 pounds of raw dolomite per ton of steel, consumes enough fuel in calcination to refine 15 tons of steel!

Merely to get the same number of pounds of refractory oxides contained in a ton of dead burned dolomite requires handling about 2 tons of raw dolomite, with a like reduction in furnace capacity. However, substitution of raw dolomite on a 2 to 1 basis fails to recognize the vastly superior efficiency of dead burned dolomite as a maintenance refractory. The coalescing agent incorpo-

rated in dead burned dolomite during manufacture causes the refractory to *set fast and stay fast* at operating temperatures. Concurrently each grain is "shrunk" to about 47% of its original volume and sized to insure a well consolidated repair of maximum density and refractory oxide content.

In contrast raw dolomite calcines to high porosity and low density in the open hearth and in the absence of an integral bond sets erratically under the fluxing effect of slag soaked up from bank and bottom.

These are some of the factors that have dictated the steady 25-year swing to dead burned dolomite. During this period Basic Refractories' capacity for producing its dead burned dolomite products, Magnefer and Syndolag, has been expanded repeatedly to meet steelmakers' needs.



*Basic Refractories Incorporated*

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# Record Output Fails to Dent Consumers' Appetites

**Steel people confident of future . . . Expect decline in ingot rate, but no nose dive . . . Consumer demand still potent . . . Production rate and tonnage hit new alltime highs.**

There are no hobgoblins marring the optimistic outlook of steel producers. Even before the coal miners started returning to the pits steel people were sitting comfortably on 60-day coal inventories, more occupied with problems like finding enough freight cars to ship their record production.

There is no mistaking the fact that steel business is excellent. And the outlook is that it will continue that way—at least until the second quarter of 1953. Even then steel people don't expect the ingot rate to go into a tailspin.

**Expect Tough Selling**—By the second quarter they expect rugged competition to spread from specialty items into tonnage products. Even before that a tough selling job will be necessary to move some of the lighter products such as light structurals and shapes, strip mill plates, merchant wire and chrome stainless items.

Steel producers have known all along that the ingot rate would have to decline sometime. If there is concern over increased capacity and its effect on bringing supply into balance with demand, no one is showing it now. Present feeling is that when the market does ease, demand will still be good enough to sustain an operating rate that will assure a fair margin of profit for the industry. Plant modernization will help considerably with more economic production.

**More Efficient**—For one thing, huge modernization programs have made steel plants more efficient. Plants have been further integrated. And new and better equipment has (1) replaced high cost equipment or (2) made possible

better utilization of existing plant. In addition, considerable time has been spent working out methods of reducing operating costs all down the line. All this is bound to prove beneficial when the operating rate does drop below capacity.

The third postwar upswing in the business cycle is putting new zip into a number of steel consuming industries. This is being reflected in unrelenting pressure for early delivery from the mills. Industries sensitive to boom psychology have apparently decided to eat their steel cake now—and fight for more in the first quarter. This explains why steel appetites are staying so strong in the face of record breaking production and shipments.

**Conversion Key**—The strongest drive for steel among civilian manufacturers is coming from Detroit. Here the competitive race for the consumer market is intense. Conversion deals, which had been expected to wither in December, now hold the key to auto output in the early months of 1953.

Here is the steel scorecard for auto production: (1) The industry is legally permitted to build as many as 1,250,000 cars in first quarter '53. (2) National Production Authority is issuing enough CMP tickets to build 630,000 cars. (3) The industry is pressing for more steel tickets—enough to build 1,050,000 units. (4) Auto executives are counting heavily on expensive and inconvenient conversion to improve their competitive position.

**Still Hungry**—Additional steel requests have also reached NPA

from makers of kitchen ranges, food freezers, lawnmowers, clothes driers, metal furniture and others. Manufacturers of small appliances say they don't have enough steel to get them past Dec. 31. Also there have been requests for more steel from makers of mattresses and bedsprings, garbage cans and other categories which usually receive better than average allocations because of their relationship to health.

A shortage of freight cars is still hampering mills in their efforts to move record tonnage into the hands of their customers. Car builders were knocked flat by the strike, and have had a dreadful time trying to restore production.

**Figures Look Bad**—They are now operating at 50 to 80 pct of capacity, due in part to lack of structurals, wide plates, and heavy castings. Car deliveries in September were only 3762, compared with 8642 last January. Cars on order have dropped from a high of 120,251 in January to 95,377 in September. Railroads aren't placing new orders; some still on the books date back 2 years.

Farm equipment producers, though denying worry over their sales outlook, have nevertheless cut back production and are generally exerting less pressure for steel delivery. Their inventories are woefully unbalanced, with alloy bars, plates and some types of sheets heading the shortage list. But rescheduling of production has lifted some pressure from their purchasing agents and their suppliers.

**Record Rate**—Steelmaking operations this week are scheduled at 107.0 pct of rated capacity, unchanged from last week's revised rate. Both rates and tonnage produced are new records.





# Another symbol of freedom

Few inventions have contributed more to the freedom of our everyday lives than the familiar "tin can."

It has freed women from kitchen chores, thus broadening their activities.

It has freed us from a monotonous diet by permitting us to enjoy whatever foods we desire, in season or out.

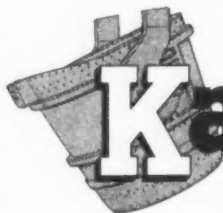
It has freed the farmer from surplus losses by preserving his crops and permitting their sale throughout the year.

It has freed our armed forces to operate anywhere throughout the globe, supported by easily portable and nutritious food.

In countless ways, the versatile can is an essential part of convenient, modern living—thanks to the continuing research and ingenuity of can manufacturers and the canning industry.

Kaiser Steel is proud to serve this great industry . . . through the production of urgently needed tin plate at its new mill in Fontana.

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*built to serve the West*

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## Market Briefs and Bulletins

**More Sulfur**—Federal financial aid will enable Pan American Sulphur Co., Dallas, and its Mexican subsidiary, Gulf Sulphur De Mexico, to build sulfur extraction plant in Vera Cruz, Mex. Cost of the plant is expected to be \$6.7 million. It will produce about 300,000 tons per year.

**CMP Carryover**—Government officials expect a much larger carryover of aluminum CMP tickets than was originally estimated. Reasons: Hydroelectric power shortage has hurt, and loss of structural steel due to steel strike has retarded new production.

**Shipments Delayed**—Breakdown of an 80-in. cold-rolled sheet mill in Chicago is holding up deliveries of cold-rolled sheets there. One buyer was told he'd have to wait 3 weeks for his order. Another mill in the area reports it will have a small carryover of cold-rolled into the first quarter and at least a 30 day carryover of hot-rolled sheet.

**M-A Grant**—Austria has received U. S. government approval to spend \$750,000 here for iron and steel mill products and industrial equipment. Authorizations include \$350,000 for iron and steel mill materials; \$250,000 for machine tools; \$100,000 for construction; mining and conveying equipment; \$30,000 for electrical equipment and \$20,000 for motor vehicles, engines and parts.

**Ground Fine**—Although no defense program is known to be suffering from a lack of diamond grinding wheels, supply of diamond crushing bort is on a hand-to-mouth basis, National Production Authority says. However, manufacturers of silicon carbide grinding wheels told NPA that silicon wheels could replace the scarce diamond wheels in nearly 90 pct of tungsten carbide tool grinding uses.

**Comeback**—Chicago area steel warehouses have recovered slightly from the steel strike, with 40 pct inventories being reported. They had been running a little below the national average. Deliveries are in good volume with good product mix. Bars in the 1 to 4 in. range are still very tight.

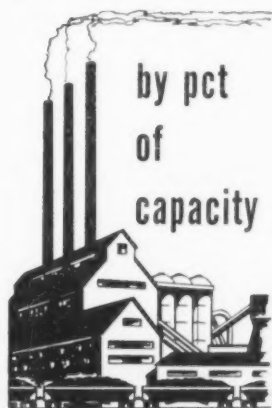
**Titanium Stockpile**—General Services Administration has purchased more than 250 tons of titanium from Du Pont Co. The metal has been stockpiled to meet future military demand.

**Mining Contract**—R. L. Wilson Associates has signed a contract with U. S. Manganese Corp. calling for delivery of 20,000 tons of manganese ore. Atlas Mining Co., Aguila, Ariz., a Wilson subsidiary, is making the shipments from Black Nugget No. 1 Mine, Maricopa County.

**Boost Productivity**—By 1960 U. S. population will be 15 pct larger than in 1950 but only 5 pct of this increase will be in the working age group. To maintain the larger population at the current living standard, worker output will have to increase 30 to 35 pct, said John Collyer, president, B. F. Goodrich Co., at a management meeting in Dallas. If the nation's productivity is to reach the required level, industry will have to invest \$200 billion, he stated. This would be almost as much as was invested in the last 30 years.

**Railroad Backlogs Chopped**—Railroads placed 1893 new locomotives in service during the first 9 months of this year. Order backlog now stands at 862 as compared with orders for 1827 locomotives a year ago.

## STEEL OPERATIONS

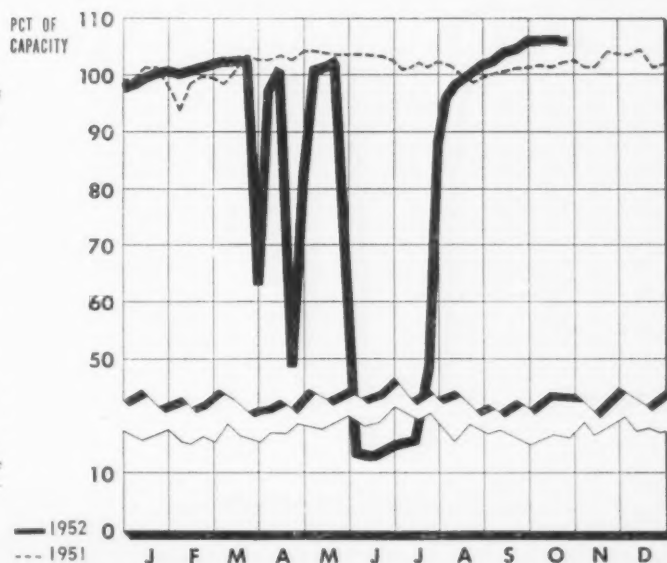


### District Operating Rates

District	Week of Oct. 26	Week of Oct. 19
Pittsburgh	108.0	109.0
Chicago	110.5	110.0
Valleys	105.0	106.0*
Philadelphia	100.0	100.0
West.	102.0	113.0*
Buffalo	106.0	93.0
Cleveland	105.5	109.0*
Detroit	109.0	111.0
Wheeling	99.0	97.0
Birmingham		
(South)	108.0	107.5
South Ohio River	96.0	90.0
St. Louis	101.0	101.0*
East	90.0	82.0*
Aggregate	107.0	107.0*

Beginning Jan. 1, 1952, operations are based on annual capacity of 108,587,670 net tons.

\* Revised



## Lead, Zinc Prices Continue Skid

**Lead follows London down third time this month for total drop of 2.50¢ . . . Zinc drops 1¢ to 12.50¢ per lb. . . Free zinc trade in London may start in January—By R. L. Hatschek.**

Continued declines in the newly-freed London market dragged U. S. lead prices down another ½¢ last week. It was the third dip of the month, bringing the metal down a full 2.50¢ to 13.50¢ per lb at New York and 13.30¢ at St. Louis. Current price is the lowest since early in the Korean war.

Traders on this side of the Atlantic are keeping a nervous finger on London's pulse. A low approximately equivalent to a New York price of 12.00¢ was reached and then the market turned up. But not very far. At the first of the week, the London price was about 0.9¢ above the bottom. Sellers in this country were definitely resisting any further declines. Some observers are of the opinion that the London market is in for further substantial cuts.

**Ministry Blamed** — Simon D. Strauss, vice-president of American Smelting & Refining Co., last week laid all blame for the lead plunge to the British Ministry of Materials. He charged that large supplies were acquired by the agency last year in anticipation of shortages that never came about. The present downtrend is the immediate result of the dumping of these supplies after reinstating lead trading on the London Metal Exchange.

Meanwhile, sellers of lead report satisfactory business volume with a good portion of it on an average price basis.

**Zinc, Too** — Official announcement was made last week that private trade in zinc will be resumed in the London Exchange as soon as arrangements can be completed. About Jan. 1 is the target date set for the actual freeing of zinc for the first time since World War II.

The Minister of Materials pointed out that supplies now and in the foreseeable future were ample. He anticipates that zinc prices will follow a trend similar to lead prices. British stocks of zinc are substantial, amounting to about 124,000 tons.

**U. S. Price Off** — On the same day this announcement was made a custom smelter here reduced his selling price a full 1¢ to 12.50¢ per lb f.o.b. East St. Louis for Prime Western zinc. The move was attributed to a combination of factors: (1) An unbalance of sales and intake, (2) steadily descending quotations on the Commodity Exchange, and (3) foreign metal being offered here in good quantity at prices well under the market.

Other sellers withdrew from the market and most business following was placed on an average price

basis though a couple of small sales were reported at the earlier 13.50¢ price. Purchasers will no doubt limit their buying to actual immediate needs for the next 2 months or so, after which the price is almost certain to decline.

**Production Slump** — With prices at their current level and with the outlook what it is, production of these twin metals may be seriously curtailed. In lead circles it is felt by many that the present price is so low that it may result in a very tight market early in 1953.

**Another Copper Meeting** — Office of Price Stabilization has agreed to meet with representatives of the copper producing companies on the subject of the copper price mess. But no date has been set as yet. Producers of the red metal are generally of the opinion that it should be freed completely to let it seek its own free-market price level.

But, of course, OPS opposes this. The agency prefers a specific price regulation—but at least the possibility exists that the ceiling will be increased by enough to set a single U. S. price. Freeing the metal would probably result in a price of about 31¢ to 33¢ per lb, compared to the 24.50¢ ceiling now applicable to most sellers. It has, however, been reported that some government people are in favor of eliminating the ceiling entirely.

**Aluminum Ceiling** — The last increase in aluminum ceilings, a boost of 1¢ per lb for primary metal and 5 pct on semi-finished and fabricated forms, was considered inadequate by the producers. It was about half the amount they asked. Now someone seems to have found a legal loophole that may enable them to get the rest of their requests.

There seems to be a clause in the controls law allowing contractors to cancel government agreements if the contract price doesn't give the company a reasonable profit.

### NONFERROUS METAL PRICES

	Oct. 22	Oct. 23	Oct. 24	Oct. 25	Oct. 27	Oct. 28
Copper, electro, Conn.	24.50	24.50	24.50	24.50	24.50	24.50
Copper, Lake delivered	24.625	24.625	24.625	24.625	24.625	24.625
Tin, Straits, New York	\$1.21⅞	\$1.21⅞	\$1.21⅞		\$1.21⅞	\$1.21⅞*
Zinc, East St. Louis	13.50	12.50	12.50	12.50	12.50	12.50
Lead, St. Louis	13.30	13.30	13.30	13.30	13.30	13.30

Note: Quotations are going prices.

\*Tentative.



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*Custom Steel Makers to Industry*

PRODUCERS OF FORGINGS, ROLLS, RINGS, CORROSION AND HEAT RESISTING CASTINGS

## Nonferrous Prices

### MILL PRODUCTS

(Cents per lb, unless otherwise noted)

#### Aluminum

(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)

Flat Sheet: 0.188 in., 2S, 3S, 31.6¢; 4S, 61S-O, 33.6¢; 52S, 35.8¢; 24S-O, 24S-OAL, 34.5¢; 76S-O, 76S-OAL, 41.9¢; 0.081 in., 2S, 3S, 32.8¢; 4S, 61S-O, 35.2¢; 52S, 37.4¢; 24S-O, 24S-OAL, 38.8¢; 76S-O, 76S-OAL, 43.9¢; 0.032 in., 2S, 3S, 34.6¢; 4S, 61S-O, 39.0¢; 52S, 41.8¢; 24S-O, 24S-OAL, 43.8¢; 76S-O, 76S-OAL, 54.8¢.

Plate 1/4 in. and heavier: 2S-F, 3S-F, 29.7¢; 4S-F, 31.7¢; 53S-F, 33.4¢; 61S-O, 32.3¢; 24S-O, 24S-OAL, 34.0¢; 76S-O, 76S-OAL, 40.7¢.

Extruded Solid Shapes: Shape factors 1 to 5, 35.5¢ to 77.2¢; 12 to 14, 36.2¢ to 33.5¢; 24 to 26, 38.7¢ to 51.2¢; 36 to 38, 45.9¢ to 51.7¢.

Rod, Rolled: 1.064 to 4.5 in., 2S-F, 3S-F, 39.4¢ to 35.2¢; cold-finished, 0.375 to 3 in., 2S-F, 3S-F, 42.5¢ to 36.8¢.

Screw Machine Stock: Rounds, 11S-Ts, 1/4 to 11/32 in., 55.2¢ to 44.1¢; 3/8 to 1 1/2 in., 43.6¢ to 41.0¢; 1 9/16 to 3 in., 40.4¢ to 37.8¢; 17S-Ts, 1.6¢ per lb lower. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in., 2S, 41.5¢ to 30.5¢; 52S, 50.4¢ to 36.8¢; 56S, 53.6¢ to 44.1¢; 17S-T4, 56.7¢ to 39.4¢; 61S-T4, 50.9¢ to 38.9¢.

Extruded Tubing: Rounds, 63S-T5, OD in in., 1/4 to 2, 38.9¢ to 56.7¢; 2 to 4, 35.2¢ to 47.8¢; 4 to 6, 35.7¢ to 43.6¢; 6 to 9, 36.2¢ to 45.7¢.

Roofing Sheet: Flat, 0.019 in. x 28 in., per sheet, 72 in., \$1.199; 96 in., \$1.598; 120 in., \$1.997; 144 in., \$2.398. 0.24 in. x 28 in., 72 in., \$1.448; 96 in., \$1.931; 120 in., \$2.414; 144 in., \$2.897. Coiled sheet: 0.019 in. x 28 in., 26.6¢ per lb; 0.024 in. x 28 in., 28.2¢ per lb.

#### Magnesium

(F.O.B. mill, freight allowed)

Sheet and Plate: FS1-O, 1/4 in., 63¢; 3/16 in., 65¢; 1/8 in., 67¢; B & S Gage 10, 68¢; 12, 72¢. Specification grade higher. Base: 30,000 lb.

Extruded Round Rod: M, diam in., 1/4 to 0.311 in., 74¢; 1/2 to 3/4 in., 57.5¢; 1 1/4 to 1.749 in., 53¢; 2 1/2 to 5 in., 48.5¢. Other alloys higher. Base up to 3/4 in. diam, 10,000 lb; 3/4 to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M, in weight per ft. for perimeters less than size indicated, 0.10 to 0.11 lb, 3.5 in., 62.3¢; 0.22 to 0.25 lb, 5.9 in., 59.3¢; 0.50 to 0.59 lb, 8.6 in., 56.7¢; 1.8 to 2.59 lb, 19.5 in., 53.8¢; 4 to 6 lb, 28 in., 49¢. Other alloys higher. Base, in weight per ft of shape: Up to 1/2 lb, 10,000 lb; 1/2 to 180 lb, 20,000 lb; 180 and heavier, 30,000 lb.

Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057; 1/4 in. to 5/16, \$1.40; 5/16 to 3/4, \$1.26; 3/4 to 1, \$1.12; 1 to 2 in., 76¢; 0.165 to 0.219, 3/4 to 1, \$1.12; 1 to 2 in., 67¢; 3 to 4 in., 56¢. Other alloys higher. Base, OD in in.: Up to 1 1/2 in., 10,000 lb; 1 1/2 in. to 3 in., 20,000 lb; 3 in. and larger, 30,000 lb.

#### Titanium

(100,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheets and strip, HR or CR, \$15; Plate, HR, \$12; Wire, rolled and/or drawn, \$10; Bar, HR or forged, \$6; Forgings, \$6.

#### Nickel and Monel

(Base prices, f.o.b. mill)

	"A" Nickel	Monel
Sheets, cold-rolled	77	60 1/2
Strip, cold-rolled	83	63 1/2
Rods and bars	73	58 1/2
Angles, hot-rolled	73	58 1/2
Plates	75	59 1/2
Seamless tubes	106	93 1/2
Shot and blocks	53 1/2	53 1/2

#### Copper, Brass, Bronze

(Freight prepaid on 200 lb)

	Sheet	Rods	Extruded Shapes
Copper	45.52	45.12	45.12
Copper, h-r	41.37	41.37	41.37
Copper, drawn	42.62	42.62	42.62
Low brass	42.34	42.03	42.03
Yellow brass	40.17	39.86	39.86
Red brass	43.10	42.79	42.79
Naval brass	44.72	38.78	40.04
Leaded brass	44.39	44.08	38.02
Com's bronze	48.44	42.83	43.89
Mang. bronze	64.72	64.97	64.97
Muntz metal	42.69	38.25	39.50
Ni silver, 10 pct	51.96	54.18	54.18

### PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed 20.00  
Aluminum pig 19.00  
Antimony, American, Laredo, Tex. 39.00  
Beryllium copper, 3.75-4.25% Be. 15.56  
Beryllium aluminum 5% Be, Dollars per lb contained Be. \$69.50  
Bismuth, ton lots 32.25  
Cadmium, del'd 22.00  
Cobalt, 97-99% (per lb) \$2.40 to \$2.47  
Copper, electro, Conn. Valley 24.50  
Copper, Lake, delivered 24.625  
Gold, U. S. Treas., dollars per oz. \$35.00  
Indium, 99.8%, dollars per troy oz. \$2.25  
Iridium, dollars per troy oz. \$200  
Lead, St. Louis 13.30  
Lead, New York 13.50  
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb. 24.50  
Magnesium, sticks, 100 to 500 lb. 42.00 to 44.00  
Mercury, dollars per 76-lb flask, f.o.b. New York \$191 to \$193  
Nickel electro, f.o.b. N. Y. warehouse 59.58  
Nickel oxide sinter, at Copper Creek, Ont., contained nickel 52.75  
Palladium, dollars per troy oz. \$24.00  
Platinum, dollars per troy oz. \$90 to \$93  
Silver, New York, cents per oz. 83.25  
Tin, New York \$1.21 1/4  
Titanium, sponge \$5.00  
Zinc, East St. Louis 12.50  
Zinc, New York 13.33  
Zirconium copper, 50 pct \$6.20

### REMELTED METALS

#### Brass Ingot

(Cents per lb, delivered carloads)

85-5-5-5 ingot  
No. 115 27.25  
No. 120 26.75  
No. 123 26.25  
80-10-10 ingot  
No. 305 33.00  
No. 315 30.50  
88-10-2 ingot  
No. 210 41.50  
No. 215 40.00  
No. 245 34.50  
Yellow ingot  
No. 405 23.25  
Manganese bronze  
No. 421 30.50

#### Aluminum Ingot

(Cents per lb, 100,000 lb and over)

95-5 aluminum-silicon alloys  
0.30 copper, max. 20.6  
0.60 copper, max. 20.4  
Piston alloys (No. 122 type) 20.5  
No. 12 alum. (No. 2 grade) 19.5  
108 alloy 20.6  
195 alloy 20.8  
13 alloy (0.60 copper max.) 20.8  
ASN-679 20.5

#### Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97 1/2% 18.80  
Grade 2—92-95% 18.60  
Grade 3—90-92% 18.40  
Grade 4—85-90% 18.20

### ELECTROPLATING SUPPLIES

#### Anodes

(Cents per lb, freight allowed, 500 lb lots)

Copper  
Cast, oval, 15 in. or longer 37.84  
Electrodeposited 33.8  
Flat rolled 38.34  
Forged ball anodes 43  
Brass, 80-20  
Cast, oval, 15 in. or longer 34.34  
Zinc, oval 26 1/2  
Ball, anodes 25 1/2  
Nickel, 99 pct plus 76.00  
Cast 77.00  
Rolled, depolarized 77.00  
Cadmium 32.15  
Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn. 97 1/2

#### Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum 63  
Copper sulfate, 99.5 crystals, bbl. 12.85  
Nickel salts, single or double, 4-100 lb bags, frt. allowed 27 1/2  
Nickel chloride, 375 lb drum 27 1/2  
Silver cyanide, 100 oz lots, per oz. 67 1/2  
Sodium cyanide, 96 pct domestic 200 lb drums 19.25  
Zinc cyanide, 100 lb drum 47.7

### SCRAP METALS

#### Brass Mill Scrap

(Cents per pound, add 1/2¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turnings
Copper	21 1/2	20 3/4
Yellow brass	19 1/2	17 1/2
Red brass	20 1/2	19 1/2
Comm. bronze	20 1/2	19 1/2
Mang. bronze	18 1/2	17 1/2
Brass rod ends	18 1/2	17 1/2

#### Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire 19.25  
No. 2 copper wire 17.75  
Light copper 16.50  
Refinery brass 17.25  
Radiators 14.75  
\* Dry copper content.

#### Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire 19.25  
No. 2 copper wire 17.75  
Light copper 16.50  
No. 1 composition 18.50  
No. 1 comp. turnings 18.25  
Rolled brass 15.50  
Brass pipe 16.50  
Radiators 14.75

#### Aluminum

Mixed old cast 9 — 9 1/2  
Mixed new clips 10 — 11  
Mixed turnings, dry 9 — 9 1/2  
Pots and pans 8 1/2 — 9

#### Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

#### Copper and Brass

No. 1 heavy copper and wire 18 1/2 — 19 1/2  
No. 2 heavy copper and wire 17 — 17 1/2  
Light copper 15 1/2 — 16  
New type shell cuttings 15 1/2 — 16  
Auto radiators (unsweated) 17 1/2 — 18  
No. 1 composition 17 — 17 1/2  
No. 1 composition turnings 16 1/2 — 17  
Unlined red car boxes 15 — 15 1/2  
Cocks and faucets 11 1/2 — 12  
Mixed heavy yellow brass 14 1/2 — 15  
Old rolled brass 15 1/2 — 16  
Brass pipe 16 — 16 1/2  
New soft brass clippings 15 1/2 — 16  
Brass rod ends 15 1/2 — 16  
No. 1 brass rod turnings 15 — 15 1/2

#### Aluminum

Alum. pistons and struts 6 1/2 — 7  
Aluminum crankcases 7 1/2  
2S aluminum clippings 10 1/2  
Old sheet and utensils 7 1/2  
Borings and turnings 5 — 6  
Misc. cast aluminum 7 1/2 — 8  
Dural clips (24S) 7 1/2

#### Zinc

New zinc clippings 8 — 8 1/2  
Old zinc 5 — 5 1/2  
Zinc routings 3 1/2 — 4  
Old die cast scrap 4 1/2 — 5

#### Nickel and Monel

Pure nickel clippings 35 — 36  
Clean nickel turnings 35 — 36  
Nickel anodes 35 — 36  
Nickel rod ends 35 — 36  
New Monel clippings 28 — 29  
Clean Monel turnings 20 — 21  
Old sheet Monel 28 — 29  
Nickel silver clippings, mixed 13 — 14  
Nickel silver turnings, mixed 12 — 13

#### Lead

Soft scrap, lead 10 3/4 — 11  
Battery plates (dry) 5 3/4 — 6 1/4  
Batteries, acid free 3 3/4

#### Magnesium

Segregated solids 15 — 16  
Castings 14 — 15

#### Miscellaneous

Block tin 100  
No. 1 pewter 70  
No. 1 auto babbitt 55 — 60  
Mixed common babbitt 14 1/2 — 14 3/4  
Solder joints 17 1/2 — 18  
Siphon tops 60  
Small foundry type 18 — 18 1/2  
Monotype 13 1/2 — 14  
Lino. and stereotype 12 1/2 — 13  
Electrotype 10 3/4 — 11  
Hand picked type shells 8 3/4 — 9  
Lino. and stereo. dross 5  
Electro. dross 4 1/2



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## for relief of "variation" headaches



We do not say that Cold Rolled Steel Strip is a production cure-all. Not even such good Strip as DSC makes!

But if excessive gauge and temper variation is giving your press or roll-forming departments production headaches, Steel Strip may be just the antidote you need.

Steel Strip does possess *uniformity* and *accuracy* of gauge and temper.

In Strip making, the leeway for thickness averages only about half of what's allowable for cold rolled sheets, for example.

Temper, too, is more closely controlled. Strip rolling and heat treatment methods give you just the temper you need—*graduated* from soft to full hard—to fit your job.

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\*STRIP must not be confused with "SH-RIP" which is sheet steel cut into strip widths, in coils or otherwise. Any reliance "Dan" will gladly tell you more about DSC STRIP.

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Standard and Production Sizes or Cut to Actual Working Dimensions

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## Will Winter Beef Up Scrap Market?

**Scrap men sometimes wonder if present firm market will take on a little of last winter's feverishness . . . Consider heavy stockpiles and uncertainty of operating rate in '53.**

Now that cold weather is rounding the bend many scrap men are wondering when the present firm market will take on a shade of the buying zeal that made trading last winter dangerous if you had a heart condition. One of the reasons that mills' appetite for scrap is less than hearty is their bloated inventory position. Another may be uncertainty of the operating rate when supply slides nearer demand next year. (See p. 105.)

Steelmaking scrap movement is reported strong from almost all quarters. That of blast furnace grades and electric furnace grades is respectable but not phenomenal. One scrap man described today's trading as comfortable.

In Pittsburgh mill rejections are on the upswing. Electric furnace material was hard to sell in Philadelphia unless it was the cream of the yards. There was more insistence on better quality for openhearth grades in Detroit.

Seven thousand tons of unprepared scrap from the Aleutians went for a ceiling \$26.34 per ton f.o.b. Oakland, Calif., last week at a Navy auction. The metal was part of an estimated total 31,000 tons which will have been recovered by a Navy salvage party by mid-November.

Auction was brisk, with 38 bidders offering the ceiling same price. Drawing on the tie bids was won by Marshall Shapiro of California Metals in Oakland. Reason for interest in this scrap was that contents could include such valuable items as new motors.

The Navy's recovery crew is now at Adak, where scrap is being loaded for sale both at Oakland and Seattle. Dutch Harbor and Attu have already been stripped.

Pittsburgh—Mill rejections reportedly are on the increase. Some brokers and dealers say outright rejection of cars has been picking up. Smaller mills are still strict on grading. Scrap is flowing better, and at least one mill was forced to hold up shipments.

Chicago—With in-transit preparation practically dead on its feet, a few buyers in this area were still offering a low springboard on electric furnace material. Openhearth continued firm and western portions of the district indicated that electric furnace material was moving well. In Chicago proper, electric furnace was a relatively slow item. Blast furnace grades were still lagging. Malleable has been moving downhill.

Philadelphia—Scrap market in this district is spotty with openhearth grades in fair demand, electric furnace material soft and hard to sell unless perfect, and cast items somewhat mixed but generally easy. Motor blocks are off in price and in most cases must be stripped to be sold. Dealers report a marked decline in intake of scrap. Industrial activity remains good.

New York—Tone of the market was practically unchanged. But demand for cast pulled in its head even more and dealers were in a position of holding while foundry demand was negligible. Electric furnace and blast furnace grades stayed at ceiling. Some weakening in electric furnace demand was reported. Scrap people considering low level of dealer stockpiles are wondering why mills don't increase their demand.

Detroit—Below-ceiling sales in cast show the only weakness in Detroit scrap. Blast furnace grades are not strong but have not slumped below ceiling. Only indication of a weakening market for openhearth grades is reflected in better quality. Collections of dealer scrap have picked up as smaller industrial plants show the

effects of high auto production. Electric furnace grades are the strongest in this market.

Cleveland—High consumer inventories are keeping the market dull. Although there is a comfortable flow of scrap, specialty grades are hard to find. Cast scrap is still bobbing below ceiling. There is an ample supply of blast furnace scrap, but mills have to pay top prices for better grades. Scrap men here feel the market will maintain steady tone through the first quarter of next year.

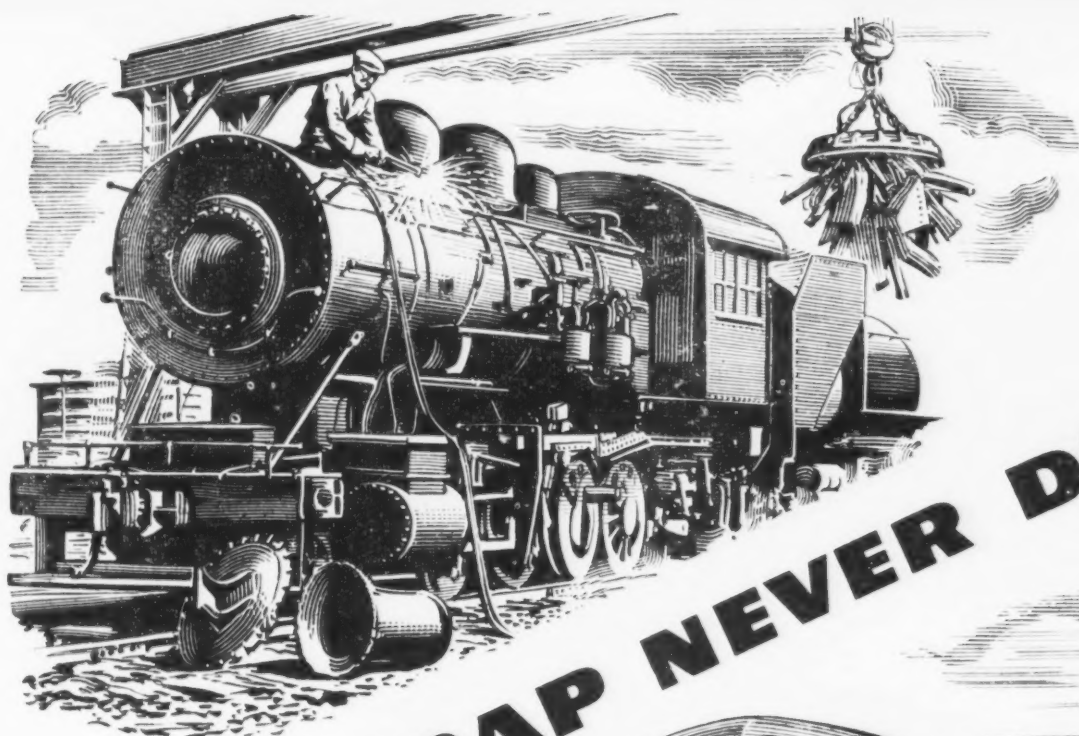
Birmingham—There has been a slightly better movement of openhearth and blast furnace scrap to the North, but brokers report they are having trouble getting enough good scrap to fill orders. If any urgent need developed orders would be hard to fill until dealers replenish their stocks. Cast market continues slow, but the supply in dealers' yards is fairly good.

Cincinnati—The market here is generally static. Dealers feel softness in cast will continue until foundry business picks up. Shortage of electric furnace grades and specialty items is still acute. Hold-up on shipments keeps openhearth grades sluggish.

Boston—Cast grades continue to be the only scrap items below ceiling. Market in New England continues steady and peaceful with scrap moving in fair quantity. Dealers in this scrap-plus area report sufficient stocks but no mountainous piles—there is no shortage here.

Buffalo—Dealers are shipping increased tonnages of scrap to numerous points outside of this area as one of leading mills here continues embargo on shipments. Embargo has now been on for more than a month. Supplies are by no means glutting dealers' yards, but outside buying is being accepted. Cast market continues on the soft side with no indications of returning to ceiling levels at this time. Late boat receipts continue.

West Coast—The Navy brought 7000 tons of unprepared scrap from the Aleutians which were sold at auction in Oakland. Thirty-eight bidders all bid ceiling price of \$26.34 per ton fob Oakland—mostly because content could include such valuable items as new motors and equipment.



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SEATTLE, WASH.

**LEADERS IN IRON AND STEEL SCRAP SINCE 1889**

October 30, 1952

# Scrap Prices

## Iron and Steel

## SCRAP PRICES

(Maximum basing point prices, per gross ton, as set by OPS in CPR 5 and amendments.)

GRADES	OPS No.	Basing Points															
		Pittsburgh	Johnstown	Brackenridge	Butler	Midland	Monessen	Sharon	Youngstown	Canton	Steubenville	Warren	Wolcott	Cleveland	Buffalo	Cincinnati	Middletown
No. 1 bundles	1	\$44.00	\$44.00	\$43.00	\$42.50	\$42.00	\$41.00	\$41.15	\$40.00	\$39.50	\$39.00	\$38.00	\$37.00	\$35.00	\$34.00	\$33.00	\$32.00
No. 1 busheling	2	44.00	44.00	43.00	42.50	42.00	41.00	41.15	40.00	39.50	39.00	38.00	37.00	35.00	34.00	33.00	32.00
No. 2 heavy melting	3	43.00	43.00	42.00	41.50	41.00	40.00	40.15	39.00	38.50	38.00	37.00	36.00	34.00	33.00	32.00	31.00
No. 2 heavy melting	4	43.00	43.00	42.00	41.50	41.00	40.00	40.15	39.00	38.50	38.00	37.00	36.00	34.00	33.00	32.00	31.00
No. 2 bundles	5	43.00	43.00	42.00	41.50	41.00	40.00	40.15	39.00	38.50	38.00	37.00	36.00	34.00	33.00	32.00	31.00
Machine shop turnings	6	34.00	34.00	33.00	32.50	32.00	31.00	31.15	30.00	29.50	29.00	28.00	27.00	25.00	24.00	23.00	22.00
Mixed borings and turnings	7	38.00	38.00	37.00	36.50	36.00	35.00	35.15	34.00	33.50	33.00	32.00	31.00	29.00	28.00	27.00	26.00
Shoveling turnings	8	38.00	38.00	37.00	36.50	36.00	35.00	35.15	34.00	33.50	33.00	32.00	31.00	29.00	28.00	27.00	26.00
Cast iron borings	10	38.00	38.00	37.00	36.50	36.00	35.00	35.15	34.00	33.50	33.00	32.00	31.00	29.00	28.00	27.00	26.00
No. 1 chemical borings	26	41.00	41.00	40.00	39.50	39.00	38.00	38.15	37.00	36.50	36.00	35.00	34.00	32.00	31.00	30.00	29.00
Forge crops	11	51.50	51.50	50.50	50.00	49.50	48.50	48.65	47.50	47.00	46.50	45.50	44.50	42.50	41.50	40.50	39.50
Bar crops and plate	12	49.00	49.00	48.00	47.50	47.00	46.00	46.15	45.00	44.50	44.00	43.00	42.00	40.00	39.00	38.00	37.00
Punchings and plate	14	46.50	46.50	45.50	45.00	44.50	43.50	43.65	42.50	42.00	41.50	40.50	39.50	37.50	36.50	35.50	34.50
Electric furnace bundles	15	46.00	46.00	45.00	44.50	44.00	43.00	43.15	42.00	41.50	41.00	40.00	39.00	37.00	36.00	35.00	34.00
Cut struc., plate, 3 ft and less	16	47.00	47.00	46.00	45.50	45.00	44.00	44.15	43.00	42.50	42.00	41.00	40.00	38.00	37.00	36.00	35.00
Cut struc., plate, 2 ft and less	17	49.00	49.00	48.00	47.50	47.00	46.00	46.15	45.00	44.50	44.00	43.00	42.00	40.00	39.00	38.00	37.00
Cut struc., 1 ft and less	18	50.00	50.00	49.00	48.50	48.00	47.00	47.15	46.00	45.50	45.00	44.00	43.00	41.00	40.00	39.00	38.00
Foundry steel, 2 ft and less	20	44.00	44.00	43.00	42.50	42.00	41.00	41.15	40.00	39.50	39.00	38.00	37.00	35.00	34.00	33.00	32.00
Foundry steel, 1 ft and less	21	46.00	46.00	45.00	44.50	44.00	43.00	43.15	42.00	41.50	41.00	40.00	39.00	37.00	36.00	35.00	34.00
Heavy trimmings	24	43.00	43.00	42.00	41.50	41.00	40.00	40.15	39.00	38.50	38.00	37.00	36.00	34.00	33.00	32.00	31.00
No. 1 RR heavy melting	RR 1	46.00	46.00	45.00	44.50	44.00	43.00	43.15	42.00	41.50	41.00	40.00	39.00	37.00	36.00	35.00	34.00
Scrap rails, random lengths	RR 14	48.00	48.00	47.00	46.50	46.00	45.00	45.15	44.00	43.50	43.00	42.00	41.00	39.00	38.00	37.00	36.00
Scrap rails, 3 ft and less	RR 16	51.00	51.00	50.00	49.50	49.00	48.00	48.15	47.00	46.50	46.00	45.00	44.00	42.00	41.00	40.00	39.00
Scrap rails, 2 ft and less	RR 17	52.00	52.00	51.00	50.50	50.00	49.00	49.15	48.00	47.50	47.00	46.00	45.00	43.00	42.00	41.00	40.00
Scrap rails, 18 in. and less	RR 18	54.00	54.00	53.00	52.50	52.00	51.00	51.15	50.00	49.50	49.00	48.00	47.00	45.00	44.00	43.00	42.00
Revolting rails	RR 15	53.00	53.00	52.00	51.50	51.00	50.00	50.15	49.00	48.50	48.00	47.00	46.00	44.00	43.00	42.00	41.00
Uncut tires	RR 20	48.00	48.00	47.00	46.50	46.00	45.00	45.15	44.00	43.50	43.00	42.00	41.00	39.00	38.00	37.00	36.00
Cut tires	RR 21	51.00	51.00	50.00	49.50	49.00	48.00	48.15	47.00	46.50	46.00	45.00	44.00	42.00	41.00	40.00	39.00
Cut bolsters and side frames	RR 23	49.00	49.00	48.00	47.50	47.00	46.00	46.15	45.00	44.50	44.00	43.00	42.00	40.00	39.00	38.00	37.00
RR specialties	RR 24, 28, 29	51.00	51.00	50.00	49.50	49.00	48.00	48.15	47.00	46.50	46.00	45.00	44.00	42.00	41.00	40.00	39.00
Solid steel axles	RR 25	58.00	58.00	57.00	56.50	56.00	55.00	55.15	54.00	53.50	53.00	52.00	51.00	49.00	48.00	47.00	46.00
No. 3 steel wheels	RR 27	51.00	51.00	50.00	49.50	49.00	48.00	48.15	47.00	46.50	46.00	45.00	44.00	42.00	41.00	40.00	39.00
Unassorted	RR 35	40.08	40.00	39.00	38.50	38.00	37.00	37.15	36.00	35.50	35.00	34.00	33.00	31.00	30.00	29.00	28.00

### Cast Scrap Ceilings

Prices set by CPR 5, OPS

(F.o.b. all shipping points)

Grades	OPS No.	Price
Cupola cast	1	\$49.00
Charging box cast	2	47.00
Heavy breakable cast	3	45.00
Cast iron brake shoes	4	41.00
Stove plate	5	46.00
Clean auto cast	6	52.00
Unstripped motor blocks	7	52.00
Cast iron carwheels	8	47.00
Malleable	10	55.00
Drop broken mach'y cast	11	52.00

Ceiling price of clean cast iron foundry runout or prepared cupola drops is 75 pct of corresponding grade.

### Under Ceiling Scrap Prices

#### Pittsburgh

Machine shop turnings	\$32.00
Cast iron borings	\$35.00 to 35.50
No. 1 machinery cast	52.00
Heavy breakable cast	45.00
Malleable	55.00

#### Chicago

Low phos. forge crops	\$50.00 to \$51.00
Cut struc., plate, 3 ft & less	44.50 to 45.50
Cut struc., plate, 2 ft & less	46.50 to 47.50
Cut struc., plate, 1 ft & less	47.50 to 48.50
Machine shop turnings	30.00 to 31.50
Mixed borings, turnings	34.00 to 35.50
Shoveling turnings	34.00 to 35.50
Cast iron borings	34.00 to 35.50
Cupola cast	44.00 to 45.00
Heavy breakable cast	41.00 to 42.00
Malleable	49.00 to 51.00
Stove plate	42.00 to 43.00
Clean auto cast	48.00 to 50.00
Charging box cast	43.00 to 44.00
Drop broken mach'y	48.00 to 50.00
Unstripped motor blocks	36.00 to 38.00

### Philadelphia Area

Clean cast chem. borings	\$36.50 to \$37.00
Cupola cast	47.00 to 48.00
Unstripped motor blocks	34.00 to 36.00
Charging box cast	45.00 to 46.00

#### Cleveland

Cast iron borings	\$34.00 to \$34.50
Stove plate	45.00 to 46.00
Malleable	54.00 to 55.00

#### Youngstown

Cast iron borings	\$35.00 to \$35.50
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#### Buffalo

No. 1 machinery cast	\$49.00 to \$50.00
No. 1 cupola cast	46.00 to 47.00

#### Birmingham

Shoveling turnings	\$30.00 to \$32.00
Cast iron borings	30.00 to 32.00
No. 1 machinery cast	47.00 to 49.00
Stove plate	41.50 to 42.50
Charging box cast	39.00 to 40.00
Heavy breakable	37.00 to 38.00
Drop broken machinery	46.00 to 47.00
Unstripped motor blocks	35.00 to 40.00

#### New York

Brokers' Buying prices per gross ton, on cars:	
Clean cast chem. borings	\$30.00 to \$30.50
No. 1 machinery cast	47.00 to 49.00
Mixed yard cast	43.00
Charging box cast	43.00 to 44.00
Heavy breakable cast	44.00 to 45.00
Unstripped motor blocks	31.00 to 35.00

#### Boston

Brokers' Buying prices per gross ton, on cars:	
Mixed cupola cast	\$38.00 to \$39.00
Heavy breakable cast	39.00 to 40.00
Stove plate	38.00 to 39.00
Unstripped motor blocks	30.00 to 31.00

### Detroit

Brokers' Buying prices per gross ton, on cars:

No. 1 cupola cast	\$48.00
Heavy breakable cast	\$43.00 to 44.00
Stove plate	43.00 to 44.00
Cast iron brake shoes	39.00 to 40.00

#### Cincinnati

No. 1 cupola cast	\$49.00
Stove plate	46.00
Drop broken cast	\$51.00 to \$52.00

#### St. Louis

Charging box cast	\$43.00 to \$44.00
No. 1 cupola cast	43.00
Heavy breakable cast	41.00 to 42.00
Unstripped motor blocks	\$38.00

#### San Francisco

No. 2 heavy melting	\$31.00
No. 2 bundles	29.00
Machine shop turnings	17.00
No. 1 cupola cast	44.00

#### Los Angeles

No. 2 heavy melting	\$31.00
No. 2 bundles	29.00
Machine shop turnings	17.00
Shoveling turnings	20.00
No. 1 cupola cast	50.00

#### Seattle

No. 2 bundles	\$29.00
No. 1 cupola cast	43.00
Heavy breakable	35.50

#### Hamilton, Ont.

No. 1 hvy. melting	\$35.50
No. 1 bundles	35.50
No. 2 bundles	35.00
Mechanical bundles	33.50
Mixed steel scrap	31.50
Mixed borings, turnings	32.50
Rails, remelting	35.50
Rails, rerolling	44.80
Bushelings	30.50
Bush, new fact. prep'd.	33.50
Bush, new fact. unprep'd	32.50
Short steel turnings	32.50
Cast scrap	50.00

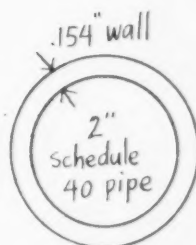
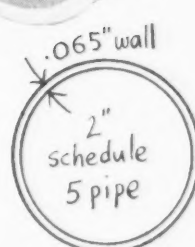
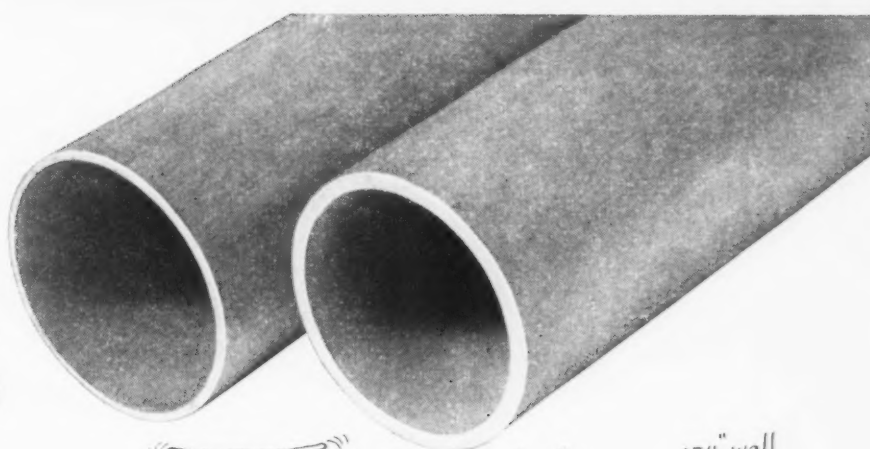




*you save money*



*you save time and labor*



*you get greater flow and capacity*

## when you specify light wall schedule 5 pipe

### WHAT SCHEDULE 5 PIPE IS—

A light wall pipe, Carpenter Schedule 5 gives you more feet of pipe for every pound of scarce stainless steel. So you can quickly see how Schedule 5 reduces your cost per foot. Plus the fact that the larger I.D. means increased flow area.

### HOW SCHEDULE 5 REDUCES COSTS

First saving is 40% to 50% on the cost of your pipe.

Since Schedule 5 is considerably lighter, this means quicker and easier installation.

And, because the increased capacity of Schedule 5 lets you use the next smaller pipe size, you can reduce substantially your costs of valves, fittings, etc.

### FITTINGS ARE AVAILABLE

This pipe is easily adapted to use with existing lines

of tubing or Schedule 40 and 10 pipe, using simple connectors. Fittings as well as stocks of Schedule 5 pipe are carried by conveniently located Carpenter distributors.

### ADDITIONAL ADVANTAGES

Tubing sizes can now be replaced with light wall pipe... for ready hook-up with standard valves, pumps and other equipment which is normally manufactured in pipe sizes.



Data Sheets give you complete information about Carpenter Schedule 5 Stainless Pipe. Write for your personal copy. **THE CARPENTER STEEL COMPANY,** Alloy Tube Division, Union, N. J.

Export Dept.: The Carpenter Steel Co., Port Washington, N.Y. "CARSTEELCO"

# Carpenter

## STAINLESS TUBING & PIPE



Analysis

Tolerance

Finish

- guaranteed on every shipment

October 30, 1952

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## Comparison of Prices

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	Oct. 28 1952	Oct. 21 1952	Sept. 30 1952	Oct. 30 1951
<b>Flat-Rolled Steel: (per pound)</b>				
Hot-rolled sheets	3.775¢	3.775¢	3.775¢	3.60¢
Cold-rolled sheets	4.675	4.675	4.675	4.45
Galvanized sheets (10 ga)	5.075	5.075	5.075	4.80
Hot-rolled strip	3.725	3.725	3.725	3.50
Cold-rolled strip	5.20	5.20	5.20	4.75
Plate	3.90	3.90	3.90	3.70
Plates wrought iron	9.00	9.00	9.00	7.85
Strains C-R strip (No. 302)	36.75†	36.75†	36.75†	36.75
<b>Tin and Terneplate: (per base box)</b>				
Tinplate (1.50 lb.) cokes	\$8.95	\$8.95	\$8.95	\$8.70
Tinplate, electro (0.50 lb.)	7.65	7.65	7.65	7.40
Special coated mfg. ternus	7.75	7.75	7.75	7.50
<b>Bars and shapes: (per pound)</b>				
Merchant bars	3.95¢	3.95¢	3.95¢	3.70¢
Cold finished bars	4.925	4.925	4.925	4.55
Alloy bars	4.675	4.675	4.675	4.30
Structural shapes	3.85	3.85	3.85	3.65
Stainless bars (No. 302)	31.50†	31.50†	31.50†	31.50
Wrought iron bars	10.05	10.05	10.05	9.50
<b>Wire: (per pound)</b>				
Bright wire	5.225¢	5.225¢	5.225¢	4.85¢
<b>Rails: (per 100 lb)</b>				
Heavy rails	\$3.775	\$3.775	\$3.775	\$3.60
Light rails	4.25	4.25	4.25	4.00
<b>Semifinished Steel: (per net ton)</b>				
Revolving billets	\$59.00	\$59.00	\$59.00	\$56.00
Slabs, reolling	59.00	59.00	59.00	56.00
Forging billets	70.50	70.50	70.50	66.00
Alloy blooms, billets, slabs	76.00	76.00	76.00	70.00
<b>Wire Rod and Skelp: (per pound)</b>				
Wire rods	4.325¢	4.825¢	4.325¢	4.10¢
Skelp	3.55	3.55	3.55	3.35
†Add 4.7 pct.				
<b>Composite: (per pound)</b>				
Finished steel base price	4.376¢	4.376¢	4.376¢	4.131¢

	Oct. 28 1952	Oct. 21 1952	Sept. 30 1952	Oct. 30 1951
<b>Pig Iron: (per gross ton)</b>				
Foundry, del'd Phila.	\$60.69	\$60.69	\$60.69	\$57.97
Foundry, Valley	55.00	55.00	55.00	52.50
Foundry, Southern, Cin'ti	58.93	58.93	58.93	55.58
Foundry, Birmingham	51.38	51.38	51.38	48.88
Foundry, Chicago†	55.00	55.00	55.00	52.50
Basic del'd Philadelphia	59.77	59.77	59.77	57.09
Basic, Valley furnace	54.50	54.50	54.50	52.00
Malleable, Chicago†	55.00	55.00	55.00	52.50
Malleable, Valley	55.00	55.00	55.00	52.50
Charcoal, Chicago	78.34	78.34	78.34	70.56
Ferromanganese	226.25	226.25	226.25	186.25

†The switching charges for delivery to foundries in the Chicago district is \$1 per ton.

‡Average of U. S. prices quoted on Ferroalloy pages.

<b>Composite: (per gross ton)</b>				
Pig iron	\$55.26	\$55.26	\$55.26	\$52.72
<b>Scrap: (per gross ton)</b>				
No. 1 steel, Pittsburgh	\$43.00*	\$43.00*	\$43.00*	\$48.00*
No. 1 steel, Phila. area	41.50*	41.50*	41.50*	41.50*
No. 1 steel, Chicago	41.50*	41.50*	41.50*	41.50*
No. 1 bundles, Detroit	41.15*	41.15*	41.15*	41.15*
Low phos., Youngstown	46.50*	46.50*	46.50*	46.50*
No. 1 cast, Pittsburgh	49.00†	49.00†	49.00†	49.00†
No. 1 cast, Philadelphia	47.50	47.50	47.50	49.00†
No. 1 cast, Chicago	44.50	44.50	45.50	49.00†

\* Basing pt., less broker's fee. † Shipping pt., less broker's fee.

<b>Composite: (per gross ton)</b>				
No. 1 heavy melting scrap	\$42.00	\$42.00	\$42.00	\$42.00
<b>Coke, Connellville: (per net ton at oven)</b>				
Furnace coke, prompt	\$14.75	\$14.75	\$14.75	\$14.75
Foundry coke, prompt	17.75	17.75	17.75	17.75
<b>Nonferrous Metals: (cents per pound to large buyers)</b>				
Copper, electrolytic, Conn.	24.50	24.50	24.50	24.50
Copper, Lake, Conn.	24.625	24.625	24.625	24.625
Tin, Straits, New York	\$1.21½†	\$1.21½†	\$1.21½†	\$1.03
Zinc, East St. Louis	12.50	12.50	13.75	19.50
Lead, St. Louis	13.30	12.80	15.80	18.80
Aluminum virgin ingot	20.00	20.00	20.00	19.00
Nickel, electrolytic	59.58	59.58	59.58	59.58
Magnesium, ingot	24.50	24.50	24.50	24.50
Antimony, Laredo, Tex	89.00	89.00	89.00	42.00

† Tentative.

## Composite Price Notes

### Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 139 of May 12, 1949, issue.)

### Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

### Scrap Steel Composite

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

## Warehouse Price Notes

Base Quantities (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over Alloy bars; 1000 to 1999 lb. All others: 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity.

Exceptions: (1) 500 to 1499 lb, (2) 1500 to 3499 lb, (3) 6000 lb or over, (4) 460 to 1499 lb.

## WARE-HOUSES

Base price, f.o.b., dollars per 100 lb.

WAKE-HOUSES		Sheets			Strip		Plates		Shapes		Bars		Alloy Bars			
Cities	City Delivery Charge	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled A 4615 As rolled	Hot-Rolled A 4140 Annealed	Cold-Drawn A 4615 As rolled	Cold-Drawn A 4140 Annealed		
Baltimore	\$.20	5.81	7.17	8.42	6.42		6.30	6.47	6.41	7.15						
Birmingham	.15	5.80	6.65	7.70 <sup>1</sup>	5.80		6.47	6.71	6.71	7.43						
Boston	.20	6.48	7.35	8.59	6.55	8.50 <sup>3</sup>	6.10	5.95	5.80	8.25						
Buffalo	.20	6.52	7.52	8.74			6.71	6.71	6.71	8.40						
Chicago	.20	5.76	6.60	8.40	6.16	6.19	6.75	6.56	6.38	7.10	10.78	11.15		13.18		
Cincinnati	.15	5.80	6.65	8.46	6.21		6.80	6.75	6.54	7.63		11.18				
Cleveland	.20	5.81	6.65	8.05	5.83		6.26	5.96	5.76	6.00	10.70	11.00	12.70	12.51		
Denver		5.81	6.65	8.05	5.83		6.37	6.08	5.90	6.95		11.07		14.42		
Detroit	.20	6.13	6.72	8.52	6.14		5.95	5.95	5.83	6.56		10.65		12.65		
Houston	.20	6.13	6.72	8.52	6.14		6.00	6.98	6.92							
Indianapolis	del'd.	6.13	6.72	8.52	6.14		6.47	6.42	6.13	7.16		11.07		13.07		
Kansas City	.20	5.80	6.65	8.16	6.00		6.12	6.28	5.89	6.66		10.79		12.79		
Los Angeles	.20	5.81		8.19	6.01		6.17			6.90						
Milwaukee	.20	7.17			7.43	8.90	7.37	7.50	7.61	8.24						
New Orleans	.15				7.69			7.80	7.71							
Philadelphia	.25	6.00	6.81	8.69	6.13	7.99	6.45	6.12	6.12	6.975	10.72	10.92	12.72	13.02		
Pittsburgh	.20	6.07	6.92				6.47	6.45		7.21						
Portland	.20	6.74	7.78	8.68	6.61	9.80	6.63	6.66	6.82	9.00	11.90	11.90		13.90		
San Francisco	.15	6.79	7.79		6.75		7.07	6.79	6.98	9.98						
Seattle	.20															
St. Louis	.20	6.47	7.31	8.50	6.51	8.07	6.62	6.62	6.50	7.57	11.15	11.45	13.13	13.43		
St. Paul	.15	6.47	7.31	8.50	6.51	8.07	6.67				11.90	12.20	13.88	14.18		
San Francisco	.15	6.60	8.45	9.75	6.75	9.15	6.66	6.60	6.60	8.36		12.05		14.60		
Seattle	.20	6.56		8.72	6.51		6.71	6.64	6.62	8.69						
St. Louis	.20	6.56		8.72	6.51		6.71	6.64	6.62	8.69						
St. Paul	.15	5.97	6.82	8.22	6.00		6.12	6.12	6.00	6.83		10.82		12.82		
San Francisco	.15	5.98		8.45	6.01		6.17			7.07						
Seattle	.20	6.28	7.12		6.32		6.43	6.43	6.31	7.85						
St. Louis	.20	6.26	7.27	8.31 <sup>2</sup>	6.56	9.53	6.60	6.39	6.59	7.53	10.74	11.04	12.74	13.04		
St. Paul	.15	6.69	7.60	8.68	7.05		7.19	6.70	6.89	8.05	10.98	11.28	12.97	13.27		
San Francisco	.15	7.10			6.81		6.64	7.25	6.44	8.45						
Seattle	.20															
St. Louis	.20	6.11	7.13	8.35	6.45		6.24	6.17	6.42	7.45	10.57	10.79		12.79		
St. Paul	.15	6.38	7.92	8.79	7.45		6.86	6.42	6.68	7.69		11.02				
San Francisco	.15	5.80	6.65	8.05	5.94		5.95	5.95	5.83	6.66		10.65		12.65		
Seattle	.20	5.81	8.45	5.97						6.90						
St. Louis	.20	7.60	9.00	10.25	7.60		7.30	7.30	7.35	9.45						
St. Paul	.15	7.90	9.45		7.65											
San Francisco	.15	8.30		10.90 <sup>4</sup>	8.45		7.85	8.00	8.40							
Seattle	.20															
St. Louis	.20	6.90	8.20	9.60	6.75	9.25	6.75	6.59	6.65	8.40		12.05		14.60		
St. Paul	.15	7.16	8.83	9.83	7.69		7.04	6.75	7.24	9.42		11.70		13.70		
San Francisco	.15	6.10	6.94	8.35	6.14	9.73	6.35	6.35	6.13	6.96	10.65	10.95	12.65	12.95		
Seattle	.20	6.30	7.83	8.39	6.60		6.60		6.33	7.40						
St. Louis	.20	6.47	7.31	8.71	6.50		6.61	6.61	6.49	7.32						

# TroubleSAVING!



with **854** sizes of . . . ready made bearings for machine tools and industrial machinery.

with **324** sizes of . . . completely finished bearings for electric motors of all sizes and makes.

with **263** sizes of . . . tubular and solid Bronze Bars completely machined on all surfaces.



*Bunting Ads won 1st award in contest sponsored by Industrial Distributors Associations.*

Bunting Standard Stock Bearings, Electric Motor Bearings and Precision Bronze Bars offer the quickest, simplest and most economical solution to your bearing problems in production and maintenance.

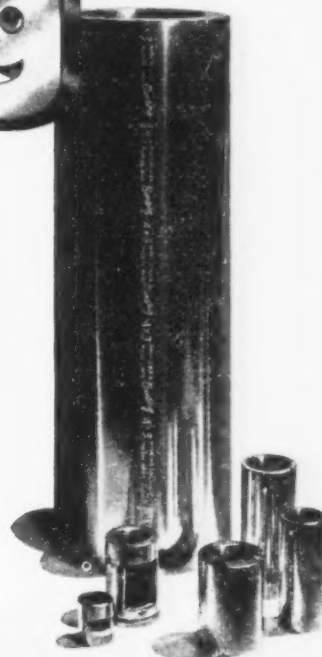
# Bunting®

BRONZE BEARINGS • PRECISION BRONZE BARS • BUSHINGS



**...IN STOCK EVERYWHERE**

Bunting products are instantly available in all markets, from the stocks of leading industrial distributors and distributors of specialized industrial items. Ask your distributor or write for catalog.



THE BUNTING BRASS & BRONZE COMPANY • TOLEDO 1, OHIO • BRANCHES IN PRINCIPAL CITIES

October 30, 1952



IRON AGE		Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.											
	STEEL PRICES	INGOTS		BILLETS, BLOOMS, SLABS		PIPE SKELP	PIL-ING	SHAPES STRUCTURALS		STRIP			
		Carbon Forging Net Ton	Alloy Net Ton	Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	<sup>44</sup> Hi Str. Low Alloy	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy
EAST	Bethlehem, Pa.					\$76.00 B3		3.90 B3	5.80 B3				
	Buffalo, N. Y.			\$59.00 B3	\$70.50 B3, R3	\$76.00 B3, R3	4.675 B3	3.90 B3	5.80 B3	3.725 B3, R3	5.10 B3	5.70 B3	7.90 B3
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.				\$77.50 A2	\$83.90 A2				4.125 A2		5.90 A2	
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.			\$59.00 B3	\$70.50 B3	\$76.00 B3		3.90 B3	5.80 B3	3.725 B3			
	Newark, N. J.												
	New Haven, Conn.										5.60 A5 5.85 D1		
	Phoenixville, Pa.							6.10 P2					
	Putnam, Conn.												
	Sparrows Pt., Md.									3.725 B3	5.10 B3	5.70 B3	7.90 B3
	Worcester, Mass.												
	Trenton, N. J.										6.45 R4		
MIDDLE WEST	Alton, Ill.									4.20 L1			
	Ashland, Ky.									3.725 A7			
	Canton-Massillon, Ohio				\$70.50 R3	\$76.00 R3 \$78.60 T5							
	Chicago, Sterling, Ill.			\$59.00 U1	\$70.50 U1, R3, W8	\$76.00 U1, R3, W8	4.675 U1	3.85 U1, W8	5.80 U1	3.725 A1, W8 4.725 N4	5.35 A1		
	Cleveland, Ohio				\$70.50 R3						5.10 A5, J3		7.45 J3
	Detroit, Mich.	\$56.00 R5	\$57.00 R5		\$73.50 R5	\$79.00 R5				4.025 G3 4.40 M2	5.30 G3 5.45 M2 5.60 D1 6.05 D2	6.30 G3	8.15 G3
	Duluth, Minn.												
	Gary, Ind. Harbor, Indiana			\$59.00 U1	\$70.50 U1	\$76.00 U1, Y1	4.675 J3	3.85 J3, U1	5.80 J3, U1 6.30 Y1	3.725 J3, U1, Y1	5.35 J3	5.65 J3, U1 6.15 Y1	
	Granite City, Ill.												
	Kokomo, Ind.												
	Middletown, Ohio										5.10 A7		
	Niles, Ohio Sharon, Pa.									4.225 S1	5.70 T4 5.80 S1	5.65 S1	7.30 S1
	Pittsburgh, Pa.	\$54.00 U1	\$57.00 U1	\$59.00 U1, J3	\$70.50 U1, J3	\$76.00 U1	3.55 U1 3.65 J3	4.675 U1	3.85 U1, J3	5.80 U1, J3	3.725 J3, A7 3.975 A3 4.225 S7, S9	5.10 J3, A7 5.45 A3 5.80 B4, S7	
WEST	Portsmouth, Ohio												
	Weirton, Wheeling, Follansbee, W. Va.							4.10 W3		3.825 W3	5.10 W3	6.10 W3	7.95 W3
	Youngstown, Ohio					\$76.00 Y1, C10	3.55 U1, R3		6.30 Y1	3.725 U1, Y1, R3	5.10 R3, Y1 5.70 C5 5.80 B4	5.65 R3, U1 6.15 Y1	7.30 R3 7.80 Y1
	Fontana, Cal.	\$81.00 K1	\$83.00 K1	\$78.00 K1	\$89.50 K1	\$95.00 K1		4.45 K1	6.40 K1	4.975 K1	6.75 K1	6.55 K1	
	Geneva, Utah				\$70.50 C7			3.85 C7	5.80 C7				
	Kansas City, Mo.							4.45 S2		4.325 S2			
	Los Angeles, Torrance, Cal.				\$89.50 B2	\$96.00 B2		4.45 C7, B2	6.35 B2	4.475 C7, B2	6.85 C1	6.40 B2	
	Minnequa, Colo.							4.30 C6		4.775 C6			
	San Francisco, Niles, Pittsburg, Cal.				\$89.50 B2			4.40 B2 4.56 P9	6.30 B2	4.475 C7, B2		6.40 B2	
	Seattle, Wash.				\$89.50 B2			4.50 B2	6.40 B2	4.725 B2		6.65 B2	
SOUTH	Atlanta, Ga.									4.275 A8			
	Birmingham, Ala. Alabama City, Ala.			\$59.00 T2	\$70.50 T2			3.85 T2, R3	5.80 T2	3.725 T2, R3			
	Houston, Texas		\$65.00 S2		\$78.50 S2	\$84.00 S2		4.25 S2		4.125 S2			

*Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.*

IRON AGE

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.													IRON AGE
SHEETS									WIRE ROD	TINPLATE†		BLACK PLATE	STEEL PRICES
Hot-rolled 18 ga. & hvyr.	Cold- rolled	Galvanized 10 ga.	Enameling 12 ga.	Long Terne 10 ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot- rolled 19 ga.		Cokes* 1.25-lb. base box	Electro* 0.25-lb. base box	Hollowware Enameling 29 ga.	
													Bethlehem, Pa.
3.775 B3	4.575 B3				5.675 B3	6.925 B3							Buffalo, N. Y.
													Claymont, Del.
													Coatesville, Pa.
4.175 A2					5.925 A2								Conshohocken, Pa.
													Harrisburg, Pa.
													Hartford, Conn.
									4.325 B3				Johnstown, Pa.
													Newark, N. J.
													New Haven, Conn.
													Phoenixville, Pa.
													Putnam, Conn.
3.775 B3	4.575 B3	5.075 B3			5.675 B3	6.925 B3	7.775 B3		4.425 B3	\$8.80 B3	\$7.50 B3		Sparrows Pt., Md.
									4.625 A5				Worcester, Mass.
									4.425 R4				Trenton, N. J.
									4.70 L1				Alton, Ill.
3.775 A7		5.075 A7	4.925 A7										Ashland, Ky.
		5.075 R3											Canton-Massillon, Ohio
3.775 W8					5.675 U1				4.325 A5, N4, R3				Chicago, Sterling, Ill.
3.775 R3, J3	4.575 R3, J3		4.925 R3		5.675 R3, J3	6.925 R3, J3			4.325 A5				Cleveland, Ohio
3.975 G3	4.775 G3				6.225 G3	7.475 G3							Detroit, Mich.
													Duluth, Minn.
3.775 I3, U1, Y1	4.575 I3, U1, Y1	5.075 I3, U1	4.925 U1	5.475 U1	5.675 I3, U1 6.175 Y1	6.925 I3, U1 7.425 Y1			4.325 Y1	\$8.70 U1, I3, Y1	\$7.40 U1, I3	6.10 U1, Y1	Gary Ind. Harbor, Indiana
4.30 G2	5.275 G2	5.50 G2	5.625 G2								\$7.60 G2	6.30 G2	Granite City, Ill.
		5.475 C9											Kokomo, Ind.
	4.575 A7		4.925 A7	5.475 A7									Middletown, Ohio
4.175 S1					5.675 S1						\$7.40 R3		Niles, Ohio Sharon, Pa.
3.775 U1, J3, A7 3.925 A3	4.575 U1, J3, A7	5.075 U1	4.925 U1		5.675 U1, J3	6.925 U1, J3	7.625 U1		4.325 A5 4.525 P6	\$8.70 U1, J3	\$7.40 U1, J3	6.10 U1	Pittsburgh, Pa.
									4.525 P7				Portsmouth, Ohio
3.775 W3, W5	4.575 W3, W5	5.075 W3, W5		5.475 W3, W5	6.025 W3	7.275 W3				\$8.70 W3, W5	\$7.40 W3, W5	6.35 W5	Weirton Wheeling, Follansbee, W. Va.
3.775 U1, R3, Y1	4.575 R3, Y1	5.775 R1	4.925 Y1	6.05 E2	5.675 R3, U1 6.175 Y1	6.925 R3 7.425 Y1		5.65 E2 5.825 R1	4.325 Y1	\$8.70 R3			Youngstown, Ohio
4.725 K1	5.525 K1				6.625 K1	7.875 K1			5.125 K1				Fontana, Cal.
3.875 C7													Geneva, Utah
													Kansas City, Mo.
4.475 C7		5.825 C7						5.575 C7	5.125 C7, B2				Los Angeles, Torrance, Cal.
									4.575 C6				Minnequa, Colo.
4.475 C7	5.525 C7	5.825 C7							4.975 C7	\$9.45 C7	\$8.15 C7		San Francisco, Niles, Pittsburg, Cal.
													Seattle, Wash.
													Atlanta, Ga.
3.775 T2, R3	4.575 T2	5.075 T2, R3			5.675 T2			4.925 R3	4.325 T2, R3	\$8.80 T2	\$7.50 T2		Birmingham, Ala. Alabama City, Ala.
									4.725 S2				Houston, Tex.

IRON AGE		Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.										
STEEL PRICES		BARS						PLATES				WIRE
		Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem Pa.				4.675 B3	6.00 B3	5.925 B3					
	Buffalo N. Y.	3.95 B3,R3	3.95 B3,R3	4.975 B5	4.675 B3,R3	6.00 B3,B5	5.925 B3	3.90 B3			5.95 B3	
	Claymont Del.							4.35 C4		5.35 C4		
	Coatesville Pa.							4.35 L4		5.75 L4		
	Conshohocken Pa.							4.35 A2	4.95 A2		6.20 A2	
	Harrisburg Pa.							6.50 C3	6.50 C3			
	Hartford Conn.			5.475 R3		6.45 R3						
	Johntown Pa.	3.95 B3	3.95 B3		4.675 B3		5.975 B3	3.90 B3		5.25 B3	5.95 B3	5.225 B3
	Newark N. J.			5.375 W10		6.35 W10						
	New Haven Conn.											
	Phoenixville Pa.											
	Putnam Conn.			5.475 W10								
	Sparrows Pt. Md.		3.95 B3					3.90 B3		5.25 B3	5.95 B3	5.325 B3
	Worcester Mass.					6.35 A5						5.525 A5
	Trenton N. J.											
MIDDLE WEST	Alton Ill.	4.50 L1										5.45 L1
	Ashland Ky.							3.90 A7				
	Canton-Massillon	3.95 R3		4.925 R2,R3	4.675 R3 4.72 T5	5.99 T5 6.00 R2,R3						
	Chicago Sterling Ill.	3.95 U,W8, R3, 4.55 N4	3.95 R3 4.70 N4	4.925 A5,B5, W8,W10	4.675 R3 U1, W8	6.00 B5,L2, R3,W8,W10 6.05 A5		3.90 U1,W8	4.95 U1	5.25 U1	5.95 U1	5.225 A3, N4,R3 5.325 K2 5.475 W7
	Cleveland Ohio	3.95 R3	3.95 R3	4.925 A5,C13		6.00 C13 6.05 A5	5.925 R3	3.90 R3,J3	4.95 J3		5.95 R3,J3	5.225 A5, C13,R3
	Detroit Mich.	4.10 R5 4.30 G3		5.075 R5,P8 5.175 P3	4.825 R5 5.025 G3	6.15 R5,P8 6.20 P3	6.675 G3	4.45 G3			6.90 G3	
	Duluth Minn.											5.252 A5
	Gary Ind. Harbor Indiana	3.95 I3,U1, Y1	3.95 I3,U1, Y1	4.925 L2, M5,R3	4.675 I3,U1, Y1	6.90 L2,M5, R3,R5	5.925 I3,U1, 6.425 Y1	3.90 I3,U1, Y1	4.95 I3	5.25 U1	5.95 I3,U1 6.45 Y1	5.325 M4
	Granite City Ill.							4.60 G2				
	Kokomo Ind.											5.325 C9
	Middletown Ohio											
	Niles Ohio Saaren Pa.							4.15 S1		5.70 S1	5.95 S1	
	Pittsburgh Pa.	3.95 U1,J3	3.95 U1,J3	4.925 A5,J3, W10,R3,C8	4.675 U1,J3	6.00 W10,C8 6.05 A5	5.925 U1,J3	3.90 U1,J3	4.95 U1,J3	5.25 U1,J3	5.95 U1,J3	5.225 A5, J3 5.475 P6
	Portsmouth Ohio											5.625 P7
	Weirton Wheeling Follansbee W. Va.	4.10 W3						3.90 W5 4.20 W3				
Youngstown Ohio	3.95 U1,Y1, R3	3.95 U1,Y1, R3	4.925 Y1	4.675 U1,C10, Y1	6.00 C10,Y1	5.925 U1 6.425 Y1	3.90 U1,Y1, R3			5.95 R3 6.45 Y1	5.225 Y1	
WEST	Fentana Cal.	4.65 K1	4.65 K1		5.725 K1		6.975 K1	4.50 K1		6.20 K1	6.55 K1	
	Geneva Utah							3.90 C7			5.95 C7	
	Kansas City Mo.	4.55 S2	4.55 S2		5.275 S2							5.825 S1
	Los Angeles Torrance Cal.	4.65 C7,B2	4.65 C7,B2	6.375 R3	5.725 B2		6.625 B2					6.175 C7,B1
	Minnequa Colo.	4.40 C6	4.75 C6					4.70 C6				5.475 C6
	San Francisco Niles Pittsburg Cal	4.65 C7,P9 4.70 B2	4.65 C7,P9 4.70 B2				6.675 B2					6.175 C6,C7
	Seattle Wash.	4.70 B2	4.70 B2				6.675 B2	4.80 B2			6.85 B2	
SOUTH	Atlanta Ga.	4.50 A8	4.50 A8									5.475 A8
	Birmingham Ala. Alamama City Ala.	3.95 T2,R3	3.95 T2,R3				5.925 T2	3.90 T2,R3			5.95 T2	5.225 T2, R3
	Houston Tex.	4.35 S2	4.35 S2		5.075 S2			4.30 S2				5.625 S2



## Key to Steel Producers

With Principal Offices

- A1 Acme Steel Co., Chicago  
A2 Alan Wood Steel Co., Conshohocken, Pa.  
A3 Allegheny Ludlum Steel Corp., Pittsburgh  
A4 American Cladmetals Co., Carnegie, Pa.  
A5 American Steel & Wire Div., Cleveland  
A6 Angell Nail & Chaplet Co., Cleveland  
A7 Arco Steel Corp., Middletown, O.  
A8 Atlantic Steel Co., Atlanta, Ga.  
  
B1 Babcock & Wilcox Tube Co., Beaver Falls, Pa.  
B2 Bethlehem Pacific Coast Steel Corp., San Francisco  
B3 Bethlehem Steel Co., Bethlehem, Pa.  
B4 Blair Strip Steel Co., New Castle, Pa.  
B5 Bliss & Laughlin Inc., Harvey, Ill.  
  
C1 Calstrip Steel Corp., Los Angeles  
C2 Carpenter Steel Co., Reading, Pa.  
C3 Central Iron & Steel Co., Harrisburg, Pa.  
C4 Claymont Products Dept., Claymont, Del.  
C5 Cold Metal Products Co., Youngstown  
C6 Colorado Fuel & Iron Corp., Denver  
C7 Columbia-Geneva Steel Div., San Francisco  
C8 Columbia Steel & Shafting Co., Pittsburgh  
C9 Continental Steel Corp., Kokomo, Ind.  
C10 Copperweld Steel Co., Glasport, Pa.  
C11 Crucible Steel Co. of America, New York  
C12 Cumberland Steel Co., Cumberland, Md.  
C13 Cuyahoga Steel & Wire Co., Cleveland  
  
D1 Detroit Steel Corp., Detroit  
D2 Detroit Tube & Steel Div., Detroit  
D3 Driver Harris Co., Harrison, N. J.  
  
E1 Eastern Stainless Steel Corp., Baltimore  
E2 Empire Steel Co., Mansfield, O.  
  
F1 Firth Sterling Inc., McKeesport, Pa.  
F2 Fitzsimmons Steel Corp., Youngstown  
F3 Follansbee Steel Corp., Follansbee, W. Va.  
  
G1 Globe Iron Co., Jackson, O.  
G2 Granite City Steel Co., Granite City, Ill.  
G3 Great Lakes Steel Corp., Detroit  
  
H1 Hanna Furnace Corp., Detroit  
  
I1 Ingersoll Steel Div., Chicago  
I2 Inland Steel Co., Chicago  
I4 Interlake Iron Corp., Cleveland  
  
J1 Jackson Iron & Steel Co., Jackson, O.  
J2 Jessop Steel Corp., Washington, Pa.  
J3 Jones & Laughlin Steel Corp., Pittsburgh  
J4 Joslyn Mfg. & Supply Co., Chicago  
  
K1 Kaiser Steel Corp., Fontana, Cal.  
K2 Keystone Steel & Wire Co., Peoria  
K3 Koppers Co., Granite City, Ill.  
  
L1 Laclede Steel Co., St. Louis  
L2 La Salle Steel Co., Chicago  
L3 Lone Star Steel Co., Dallas  
L4 Lukens Steel Co., Coatesville, Pa.  
  
M1 Mahoning Valley Steel Co., Niles, O.  
M2 McLouth Steel Corp., Detroit  
M3 Mercer Tube & Mfg. Co., Sharon, Pa.  
M4 Mid-States Steel & Wire Co., Crawfordsville, Ind.  
M5 Menarch Steel Co., Inc., Hammond, Ind.  
M6 Mystic Iron Works, Everett, Mass.  
  
N1 National Supply Co., Pittsburgh  
N2 National Tube Co., Pittsburgh  
N3 Niles Rolling Mills Co., Niles, O.  
N4 Northwestern Steel & Wire Co., Sterling, Ill.  
  
O1 Oliver Iron & Steel Co., Pittsburgh  
  
P1 Page Steel & Wire Div., Monessen, Pa.  
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.  
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.  
P4 Pittsburgh Coke & Chemical Co., Pittsburgh  
P5 Pittsburgh Screw & Bolt Co., Pittsburgh

- P6 Pittsburgh Steel Co., Pittsburgh  
P7 Portsmouth Div., Detroit Steel Corp., Detroit  
P8 Plymouth Steel Co., Detroit  
P9 Pacific States Steel Co., Niles, Cal.

- R1 Reeves Steel & Mfg. Co., Dover, O.  
R2 Reliance Div. Eaton Mfg. Co., Massillon, O.  
R3 Republic Steel Corp., Cleveland  
R4 Roehling Sons Co. (John A.), Trenton, N. J.  
R5 Rotary Electric Steel Co., Detroit

- S1 Sharon Steel Corp., Sharon, Pa.  
S2 Sheffield Steel Corp., Kansas City  
S3 Shenango Furnace Co., Pittsburgh  
S4 Simonds Saw & Steel Co., Fitchburg, Mass.  
S5 Sloss Sheffield Steel & Iron Co., Birmingham  
S6 Standard Forging Corp., Chicago  
S7 Stanley Works, New Britain, Conn.  
S8 Superior Drawn Steel Co., Monaca, Pa.  
S9 Superior Steel Corp., Carnegie, Pa.  
S10 Sweet's Steel Co., Williamsport, Pa.  
S11 Seidelhuber Steel Rolling Mills, Seattle

- T1 Tonawanda Iron Div., N. Tonawanda, N. Y.  
T2 Tennessee Coal & Iron Div., Birmingham  
T3 Tennessee Products & Chem. Corp., Nashville  
T4 Thomas Strip Div., Warren, O.  
T5 Timken Steel & Tube Div., Canton, O.  
T6 Tremont Nail Co., Wareham, Mass.

- U1 United States Steel Co., Pittsburgh  
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.

- W1 Wallingford Steel Co., Wallingford, Conn.  
W2 Washington Steel Corp., Washington, Pa.  
W3 Weirton Steel Co., Weirton, W. Va.  
W4 Wheatland Tube Co., Wheatland, Pa.  
W5 Wheeling Steel Corp., Wheeling, W. Va.  
W6 Wickwire Spencer Steel Div., Buffalo  
W7 Wilson Steel & Wire Co., Chicago  
W8 Wisconsin Steel Co., S. Chicago, Ill.  
W9 Woodward Iron Co., Woodward, Ala.  
W10 Wyckoff Steel Co., Pittsburgh

- Y1 Youngstown Sheet & Tube Co., Youngstown

## MERCHANT WIRE PRODUCTS

Fab Mill	Standard & Coated Nails Woven Wire Fence 9-15 1/2 ga.	Fence Posts	Single Loop Bale Ties	Twisted Barbed Wire	Galv. Barbed Wire	Merch. Wire Ann'd	Merch. Wire Galv.
	Cal	Col	Col	Cal	Col	e. lb	e. lb
Alabama City R3*	118	135		132		144	6.075 6.325
Aliquippa Pa J3	127	141				148	6.075 6.525
Atlanta A8	130	140		135		149	6.325 6.675
Bartonville K2	127	139	140	132	148	148	6.075 6.50
Buffalo W6							
Chicago N4*	118	137		132	146	146	6.075 6.425
Cleveland A6							6.075 6.225
Cleveland A5							6.075 6.225
Crawford M4	130	140		134		149	6.175 6.55
Danora Pa A5*	118	133		132		142	6.075 6.225
Duluth A5*	118	133		132		142	6.075 6.225
Fairfield Ala T2*	118	133		132		142	6.075 6.225
Houston S2	135	147				156	6.475 6.925
Johnston Pa B3	127		148				6.575
Joliet Ill A5*	118	133		132		142	6.075 6.225
Kokomo Ind C9			142				6.175 6.425
Los Angeles B2							7.025
Kansas City S2	139			144		160	6.675 7.125
Minneapolis C6*	123	146	138	137		153	6.325 6.70
Monessen P6							
Moline Ill R3			136				
Pittsburg Cal C7*	137	156		156	162	162	7.025 7.125
Pittsburg P6	127	138				147	6.075 6.45
Portsmouth P7	132						6.47
Rankin Pa A5*	118	133				142	6.075 6.225
So. Chicago R3*	118	135	140	132		144	6.075 6.325
S. San Fran C6				156		167	7.025 7.40
Sparrows Pt B3	129			134	151		6.675
Struthers O Y1							6.075 6.475
Terrance Cal C7*	138						7.025
Worcester A5*	124						6.375 6.525
Williamsport Pa S10							

Cut Nails carloads base \$7.80 per 100 lb. (less 20¢ to jobbers) at Conshohocken Pa. (A2) Wheeling W. Va. (W5) \$7.80.

\* Add 45¢ per 100 lb. on Std. & Coated Nails.

† Zinc extra if not included on Galv. Merch. Wire.

‡ Galv. Merch. Wire based on 15¢ Zinc.

## STAINLESS STEELS

Base price, cents per lb., f.a.b. mill. Ads 4.7 pct

Product	301	302	303	304	316	321	347	410	416	430
Ingot, rerolling	14.25	15.25	16.75	16.25	24.75	20.00	21.75	12.75	14.75	13.00
Slabs, billets, rerolling	18.50	20.00	22.00	21.00	32.25	26.25	28.50	18.50	20.00	16.75
Forg. discs, die blocks, rings	34.00	34.25	36.75	35.75	53.00	40.25	44.75	28.00	28.50	28.50
Billets, forging	26.25	26.50	28.50	27.75	41.50	31.25	35.00	21.50	22.00	22.00
Bars, wires, structural	31.25	31.50	34.00	33.00	49.25	37.00	41.50	25.75	26.25	26.25
Plates	33.00	33.25	35.25	35.25	52.00	40.75	45.25	27.00	27.50	27.50
Sheets	41.00	41.75	43.25	43.25	57.00	49.25	53.75	36.50	37.00	39.00
Strip, hot-rolled	26.50	28.25	32.50	30.25	48.75	37.00	41.25	23.50	30.25	24.00
Strip, cold-rolled	34.00	36.75	40.25	38.75	59.00	48.25	52.25	30.50	37.00	31.00

STAINLESS STEEL PRODUCING POINTS—Sheets Midland, Pa., C11 Brackenridge, Pa., A3 Butler, Pa., A7 McKeesport, Pa., U1 Washington, Pa., W2 (type 316 add 4.5¢); J2 Baltimore, E1 Middletown, O., A7 Massillon, O., R3 Gary, U1 Bridgeville, Pa., U2 New Castle, Ind., I2 Ft. Wayne, J4 Lockport, N. Y., R4.

Strip Midland, Pa., C11 Cleveland, A5 Carnegie, Pa., S9 McKeesport, Pa., F1 Reading, Pa., C2 Washington, Pa., W2 (type 316 add 4.5¢); W. Leeburg, Pa., A3 Bridgeville, Pa., U2 Detroit, M2 Canton Massillon, O., R3 Middletown, O., A7 Harrison, N. J., D3 Youngstown, C3 Lockport, N. Y., S4 Sharon, Pa., S1 (type 301 add 1¢); Butler, Pa., A7 Wallingford, Conn., W1.

Bars Baltimore, A7 Duquesne, Pa., U1 Munhall, Pa., U1 Reading, Pa., C2 Titusville, Pa., U2 Washington, Pa., J2 McKeesport, Pa., U1, F1 Bridgeville, Pa., U2 Dunkirk, N. Y., A3 Massillon, O., R3 Chicago, U1 Syracuse, N. Y., C11 Watervliet, N. Y., A3 Waukegan, A5 Lockport, N. Y., S4 Canton, O., T5 Ft. Wayne, J4.

Wires Waukegan, A5 Massillon, O., R3 McKeesport, Pa., F1 Ft. Wayne, J4 Harrison, N. J., D3 Baltimore, A7 Dunkirk, A3 Monessen, P1 Syracuse, C11 Bridgeville, U2.

Structurals Baltimore A7 Massillon, O., R3 Chicago, Ill., J4 Watervliet, N. Y., A5 Syracuse, C11.

Plates Brackenridge, Pa., A3 (type 416 add 1¢); Butler, Pa., A7 Chicago, U1 Munhall, Pa., U1 Midland, Pa., C11 New Castle, Ind., I2 Lockport, N. Y., S4 Middletown, A7 Washington, Pa., J2 Cleveland, Massillon, R3.

Forged discs, die blocks, rings, Pittsburgh, C11 Syracuse, C11 Ferndale, Mich., A3 Washington, Pa., J2.

Forging billets, Midland, Pa., C11 Baltimore, A7 Washington, Pa., J2 McKeesport, F1 Massillon, Canton, O., R3 Watervliet, A3 Pittsburgh, Chicago, U1; Syracuse, C11.

ALLEGHENY LUDLUM—Slightly higher on Type 301; slightly lower on others in 300 series.

WASHINGTON STEEL—Slightly lower on 300 series except where noted.

# Miscellaneous Prices

## PIPE AND TUBING

Base discounts f.o.b. mills. Base price about \$200 per net ton.

	BUTTWELD																		SEAMLESS					
	1/2 In.		3/4 In.		1 In.		1 1/4 In.		1 1/2 In.		2 In.		2 1/2-2 In.		2 In.		2 1/2-3 In.		3 1/2-4 In.					
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
STANDARD T. & C.																								
Sparrows Pt. B3	30.5	8.25	33.5	12.25	35.5	15.75	36.5	16.25	37.0	17.25	37.5	17.75	38.0	18.25										
Youngstown R3	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25										
Fontana K1	21.0	-1.25	24.0	2.75	26.5	6.25	27.0	6.75	27.5	7.75	28.0	8.25	28.5	8.75										
Pittsburgh J3	32.5	10.25	35.5	13.25	38.0	15.75	38.5	16.75	39.0	17.25	39.5	17.75	40.0	18.75	24.0	2.25	27.0	5.75	29.0	7.75				
Alton, Ill. L1	31.5	9.25	34.5	13.25	37.0	16.75	37.5	17.25	38.0	18.25	38.5	18.75	39.0	19.25										
Sharon M3	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	24.0		27.0		29.0					
Pittsburgh N1	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25										
Wheeling W3	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25										
Wheatland H4	32.5	10.25	35.5	13.25	38.0	15.75	38.5	16.75	39.0	17.25	39.5	17.75	40.0	18.75										
Youngstown Y1	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	24.0	3.75	27.0	6.75	29.0	8.75				
Indiana Harbor Y1	31.5	9.25	34.5	13.25	37.0	16.75	37.5	17.25	38.0	18.25	38.5	18.75	39.0	19.25										
Lorain N2	32.5	15.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	24.0	3.75	27.0	6.75	29.0	8.75				
EXTRA STRONG PLAIN ENDS																								
Sparrows Pt. B3	30.25	9.5	34.25	13.5	36.25	17.0	36.75	17.5	37.25	18.5	37.75	19.0	38.25	19.5										
Youngstown R3	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5										
Fontana K1	20.75		24.75		26.75		27.25		27.75		28.25		28.75											
Pittsburgh J3	32.25	10.0	36.25	14.0	38.25	16.0	38.75	17.0	39.25	17.5	39.75	18.0	40.25	19.0	23.75	2.0	27.75	6.5	31.25	10.0				
Alton, Ill. L1	29.25	8.5	33.25	12.5	35.25	16.0	35.75	16.5	36.25	17.5	36.75	18.0	37.25	18.5										
Sharon M3	32.25	10.5	36.25	14.5	38.25	17.5	38.75	18.0	39.25	18.5	39.75	19.0	40.25	19.5										
Pittsburgh N1	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5	23.75		27.75		31.25					
Wheeling W3	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5										
Wheatland H4	32.25	10.0	36.25	14.0	38.25	16.0	38.75	17.0	39.25	17.5	39.75	18.0	40.25	19.0										
Youngstown Y1	32.25	11.5	36.25	15.5	37.75	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	22.5	23.75	4.5	27.75	8.5	31.25	12.0				
Indiana Harbor Y1	31.25	10.5	35.25	14.5	37.25	17.5	37.75	18.5	38.25	19.5	38.75	20.0	39.25	20.5										
Lorain N2	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5	23.75	4.5	27.75	8.5	31.25	12.0				

Galvanized discounts based on zinc, at 17¢ per lb. East St. Louis. For each 1¢ change in zinc, discounts vary as follows: 1/2 in., 3/4 in., and 1 in., 1 pt.; 1 1/4 in., 1 1/2 in., 2 in., 3/4 pt.; 2 1/2 in., 3 in., 1 1/2 pt. Calculate discounts on even cents per lb. of zinc, i.e., if zinc is 16.5¢ to 17.50¢ per lb., use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢. Threads only butt-weld and seamless, 1 pt. higher discount. Plain ends, butt-weld and seamless, 3 in. and under, 3/4 pts. higher discount. Butt-weld jobbers' discount, 5 pct. St. Louis zinc price now 12.5¢.

## COKE

Furnace, beehive (f.o.b. oven)	Net-Ton
Connellsville, Pa.	\$14.50 to \$15.00
Foundry, beehive (f.o.b. oven)	
Connellsville, Pa.	\$17.50 to \$18.00
Foundry, oven coke	
Buffalo, del'd	\$26.58
Chicago, f.o.b.	23.00
Detroit, f.o.b.	24.00
New England, del'd	24.80
Seaboard, N. J., f.o.b.	22.70
Philadelphia, f.o.b.	22.70
Swedeland, Pa., f.o.b.	22.60
Painesville, Ohio, f.o.b.	24.00
Erie, Pa., f.o.b.	23.50
Cleveland, del'd	25.72
Cincinnati, del'd	25.06
St. Paul, f.o.b.	22.50
St. Louis	25.40
Birmingham, del'd	21.69
Neville Island	23.00
Lone Star, Tex., f.o.b.	18.50

## ELECTRICAL SHEETS

22 Ga. H-R cut length	Armature	Elec.	Motor	Dynamo	Transf. 72	Transf. 65	Transf. 58
F.o.b. Mill Cents Per Lb.							
Beech Bottom W5	7.85	9.10	9.00	10.45	11.00	11.70	
Brackenridge A3	7.35	7.85	9.10	9.00	10.45	11.00	11.70
Granite City G2		8.55	9.80				
Ind. Harbor J3	7.35	7.85	9.10				
Mansfield E2	7.35	7.85	9.10	9.00			
Niles, O. N3	7.35	7.85					
Vandergrift U1	7.35	7.85	9.10	9.00	10.45	11.00	11.70
Warren, O. R3	7.35	7.85	9.10				
Zanesville A7	7.35	7.85	9.10	9.00	10.45	11.00	11.70

## CAST IRON WATER PIPE

	Per Net Ton
6 to 24-in., del'd Chicago	\$105.30 to \$108.80
6 to 24-in., del'd N.Y.	108.50 to 109.50
6 to 24-in., Birmingham	91.50 to 96.00
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipments less	\$123.00 to \$130.00
Class "A" and gas pipe, \$5 extra; 4-in. pipe is \$5 a ton above 6-in.	

## BOILER TUBES

\$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size	Seamless	Elec. Weld
	OD-In.	B.W. Ga.	H.R. C.D. H.R. C.D.
Babcock & Wilcox	2	13	23.93 28.14 23.19 27.28
	2 1/2	12	32.17 37.83 31.19 36.67
	3	12	35.78 42.11 34.69 40.82
	3 1/2	11	44.72 52.65 43.36 51.05
	4	10	55.52 65.31 53.83 63.32
National Tube	2	13	22.81 27.94 22.23
	2 1/2	12	31.28 38.31 30.51
	3	12	35.87 43.93 34.98
	3 1/2	11	42.56 52.12
	4	10	54.02 66.16
Pittsburgh Steel	2	13	28.58
	2 1/2	12	32.16 39.19
	3	12	36.87 44.93
	3 1/2	11	43.76 53.32
	4	10	67.68

## C-R SPRING STEEL

Cents Per Lb. F.o.b. Mill	CARBON CONTENT				
	0.26	0.41	0.61	0.81	1.06
	0.40	0.60	0.80	1.05	1.35
Bridgeport, Conn. S7					
Carnegie, Pa. S9	7.65	8.25	10.20	12.50	
Cleveland A5	5.10	7.30	8.25	10.20	12.50
Detroit D1	6.45	7.50	8.10		
New Castle, Pa. B4	5.80	7.65	8.25	10.20	
New Haven, Conn. D1	6.70	7.60	8.20		
Sharon, Pa. S1	5.80	7.65	8.25	10.20	12.50
Trenton, N. J. R4		7.95	8.55	10.50	12.80
Warren, Ohio T4	6.20	7.65	8.25	10.20	12.50
Weirton, W. Va. W3	5.80	7.65	8.25	10.20	12.50
Worcester, Mass. A5	5.40	7.60	8.55	10.50	12.80
Youngstown C5		7.65	8.25	10.20	12.50

## PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	# Basic	Foundry	Malleable	Bessemer	Low Phos.	Ill. Furnace Silvery	Low Phos. Charcoal
Bethlehem B3	56.50	57.00	57.50	58.00			
Birmingham R3	50.88	51.38					
Birmingham W9	50.88	51.38					
Birmingham S3	50.88	51.38					
Buffalo R3	54.50	55.00	55.50				
Buffalo H1	54.50	55.00	55.50			66.75	
Buffalo W6	54.50	55.00	55.50				
Chicago I4	54.50	55.00	55.00	55.50			
Cleveland A5	54.50	55.00	55.00	55.50	59.50		
Cleveland R3	54.50	55.00	55.00				
Dangerfield, Tex. L3	50.50	51.00	51.00				
Duluth I4	54.50	55.00	55.00	55.50			
Erie I4	54.50	55.00	55.00	55.50			
Everett, Mass. M6		59.25	59.75				
Fontana K1	60.50	61.00					
Geneva, Utah C7	54.50	55.00					
Granite City, Ill. K3	56.40	56.90	57.40				
Hubbard, Ohio Y1	54.50	55.00	55.00				
Ironton, Utah C7	54.50						
Jackson, Ohio J1/G1						65.50	
Lyle, Tenn. T3							68.50
Minnequa C6	56.50	57.50	57.50				
Monessen P6	56.50						
Neville Island P4	54.50	55.00	55.00	55.50			
Pittsburgh U1	54.50			55.50			
Sharpville S3	54.50	55.00	55.00	55.50			
Steelton B3	56.50	57.00	57.50	58.00	62.50		
Swedeland A2	58.50	59.00	59.50	60.00			
Toledo I4	54.50	55.00	55.00	55.50			
Troy, N. Y. R3	56.50	57.00	57.50		62.50		
Youngstown Y1	54.50	55.00	55.00	55.50			
N. Tonawanda, N. Y. T1		55.00	55.50				

\* DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base, (1.75 to 2.25 pct, except low phos., 1.75 to 2.00 pct), 50¢ per ton for each 0.50 pct manganese over 1 pct, \$2 per ton for 0.5 to 0.75 pct nickel, \$1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus, content 0.70 pct and over. Silvery Iron: Add \$1.50 per ton net for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. \$1 per ton for 0.75 pct or more phosphorus, manganese as above. Bessemer ferro-silicon prices are \$1 over comparable silvery iron.

## Miscellaneous Prices

### RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Treated
Bessemer U1	3.775	4.25	4.925				
Chicago R3				6.65			
Cleveland R3							
Ensley T2	3.775	4.25					
Fairfield T2		4.25		6.65		4.775	
Gary U1	3.775	4.25				4.775	
Ind. Harbor T3	3.775		4.925	6.65		4.775	
Johnstown B3		4.25					
Joliet U1		4.25	4.925				
Kansas City S2							
Lackawanna B3	3.775	4.25	4.925			4.775	
Lebanon B3				6.65			
Minnequa C6	3.775	4.75	4.925	6.65		4.775	9.85
Pittsburgh R3							
Pittsburgh O1							
Pittsburgh P5							
Pittsburgh T3				6.65			
Pitt g. Cal. C7						4.925	
Seattle B2				7.15		4.925	
Steelton B3	3.775		4.925			4.775	
Struthers Y1				6.65			
Torrance C7						4.925	
Youngstown R3				6.65			

### TOOL STEEL

F.o.b. mill  
Add 4.7 pct

W	Cr	V	Mo	Co	Base per lb
18	4	1			\$1.505
18	4	1		5	\$2.12
18	4	2			\$1.65
1.5	4	1.5	8		\$1.00
6	4	2	6		\$6.50
High-carbon chromium					63.50
Oil hardened manganese					350
Special carbon					32.50
Extra carbon					270
Regular carbon					230
Warehouse prices on and east of Mississippi are 3.50 per lb. higher. West of Mississippi, 5.50 higher.					

### CLAD STEEL

Add 4.7 pct

Stainless-carbon	Plate	Sheet
No. 304, 20 pct.		
Coatesville, Pa. L4	*29.5	
Washington, Pa. J2	*29.5	
Claymont, Del. C4	*28.00	
Conshohocken, Pa. A2		*27.50
New Castle, Ind. I2	*29.77	*26.24
Nickel-carbon		
10 pct Coatesville, Pa. L4	32.5	
Inconel-carbon		
10 pct Coatesville, Pa. L4	40.5	
Monel-carbon		
10 pct Coatesville, Pa. L4	33.5	
No. 302 Stainless-copper stainless, Carnegie, Pa. A4		77.00
Aluminized steel sheets, hot dip, Butler, Pa. A7		7.75

\* Includes annealing and pickling, or sandblasting.

### ELECTRODES

Cents per lb, f.o.b., plant threaded electrodes with nipples, unboxed

Diam. in.	Length in.	Cents Per lb.
GRAPHITE		
17, 18, 20	60, 72	17.85
8 to 16	48, 60, 72	17.85
	48, 60	19.57
6	48, 60	20.95
4, 5	40	21.50
3	40	22.61
2 1/2	24, 30	23.15
2	24, 30	25.36
CARBON		
10	100, 110	8.45
25	65, 110	8.45
30	65, 84, 110	8.45
24	72 to 104	8.45
20	84, 90	8.45
17	60, 72	8.45
14	60, 72	9.02
10, 12	60	9.30
8	60	9.58

### FLUORSPAR

Washed gravel, f.o.b. Rosiclare, Ill.  
Price, net ton; Effective CaF<sub>2</sub> content:  
70% or more \$43.00  
60% or less 40.00

### BOLTS, NUTS, RIVETS, SCREWS

#### Consumer Prices

(Base, discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

#### Nuts, Hot Pressed, Cold Punched—Sq.

Pct Off List		Less		Keg.		K.	
Reg.	Hvy.	Reg.	Hvy.	Reg.	Hvy.	Reg.	Hvy.
1/2 in. & smaller	15	28 1/2	15	28 1/2	21	28 1/2	21
9/16 in. & 5/8 in.	12	25	6 1/2	21			
3/4 in. to 1 1/2 in.							
inclusive	9	23	1	16 1/2			
1 5/8 in. & larger	7 1/2	22	1	16 1/2			

#### Nuts, Hot Pressed—Hexagon

1/2 in. & smaller	26	37	22	34
9/16 in. & 5/8 in.	16 1/2	29 1/2	6 1/2	21
3/4 in. to 1 1/2 in.				
inclusive	12	25	2	17 1/2
1 5/8 in. & larger	8 1/2	23	2	17 1/2

#### Nuts, Cold Punched—Hexagon

1/2 in. & smaller	26	37	22	34
9/16 in. & 5/8 in.	23	35	17 1/2	30 1/2
3/4 in. to 1 1/2 in.				
inclusive	19 1/2	31 1/2	12	25
1 5/8 in. & larger	8 1/2	23	2	17 1/2

#### Nuts, Semi-Finished—Hexagon

Reg.		Hvy.	
Light			
1/2 in. & smaller	35	45	28 1/2
9/16 in. & 5/8 in.	23	35	17 1/2
3/4 in. to 1 1/2 in.			
inclusive	24	36	15
1 5/8 in. & larger	13	26	8 1/2
7/16 in. & smaller			
3/4 in. thru 5/8 in.	35	45	28 1/2
3/4 in. to 1 1/2 in.			
inclusive	26	37	

#### Stove Bolts

Pct Off List

Packaged, steel, plain finished 48—19  
Packaged, plain finish 31—19  
Bulk, plain finish\*\* 62\*  
\*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.  
\*\*Zinc, Parkerized, cadmium or nickel plated finishes add 6c per lb net. For black oil finish, add 2c per lb net.

#### Rivets

Base per 100 lb

1/2 in. & larger \$7.85

#### Cap and Set Screws

(In bulk)

Pct Off List

Hexagon head cap screws, coarse or fine thread, 1/4 in. thru 5/8 in. x 6 in., SAE 1020, bright 54  
3/4 in. thru 1 in. up to & including 6 in. 48  
1/4 in. thru 5/8 in. x 6 in. & shorter high C double heat treat 46  
3/4 in. thru 1 in. up to & including 6 in. 41  
Milled studs 35  
Flat head cap screws, listed sizes 16  
Fillister head cap, listed sizes 34  
Set screws, sq head, cup point, 1 in. diam. and smaller x 6 in. & shorter 53

#### Machine and Carriage Bolts

Pct Off List

Less	Case	C
1/2 in. & smaller x 6 in. & shorter	15	28 1/2
9/16 in. & 5/8 in. x 6 in. & shorter	18 1/2	30 1/2
3/4 in. & larger x 6 in. & shorter	17 1/2	29 1/2
All diam. longer than 6 in.	14	27 1/2
Lag, all diam. x 6 in. & shorter	23	35
Lag, all diam. longer than 6 in.	21	33
Plow bolts	34	

### REFRACTORIES

#### Fire Clay Brick

Carloads, per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add \$5) \$94.60  
No. 1 Ohio 88.00  
Sec. quality, Pa., Md., Ky., Mo., Ill. 88.00  
No. 2 Ohio 79.20  
Ground fire clay, net ton, bulk (except Salina, Pa., add \$1.50) 13.75

#### Silica Brick

Mt. Union, Pa., Ensley, Ala. \$94.60  
Childs, Pa. 99.00  
Hays, Pa. 100.10  
Chicago District 104.50  
Western Utah and Calif. 111.10  
Super Duty, Hays, Pa., Athens, Tex., Chicago 111.10  
Silica cement, net ton, bulk, Eastern (except Hays, Pa.) 16.50  
Silica cement, net ton, bulk, Hays, Pa. 18.70  
Silica cement, net ton, bulk, Ensley, Ala. 17.60  
Silica cement, net ton, bulk, Chicago District 17.60  
Silica cement, net ton, bulk, Utah and Calif. 24.70

#### Chrome Brick

Per Net Ton

Standard chemically bonded ball, Chester \$82.66

#### Magnesite Brick

Standard, Baltimore \$104.60  
Chemically bonded, Baltimore 93.00

#### Grain Magnesite

St. 5-in. grains

Domestic, f.o.b. Baltimore in bulk fines removed \$62.70  
Domestic, f.o.b. Chowalash, Wash., in bulk 34.50  
in sacks 41.80

#### Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio per net ton, bulk Midwest, add 10c; Missouri Valley, add 20c...\$15.75

### LAKE SUPERIOR ORES

51.50% Fe; natural content, delivered lower Lake ports. Prices effective July 26, 1952

Gross Ton  
Old range, bessemer \$9.45  
Old range, nonbessemer 9.30  
Mesabi, bessemer 9.20  
Mesabi, nonbessemer 9.05  
High phosphorus 9.05

After adjustments for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 1, 1950, in Lake vessel rates, upper Lake rail freights, dock handling charges and taxes thereon.

### METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.i.f. New York, ocean bags... 10.90c  
Canadian sponge iron, del'd. in East 12.00c  
Domestic sponge iron, 98+ % Fe, carload lots 15.50c to 17.00c  
Electrolytic iron, annealed, 99.5+ % Fe 41.00c  
Electrolytic iron, unannealed, minus 325 mesh, 99+ % Fe 60.00c  
Hydrogen reduced iron, minus 300 mesh, 98+ % Fe 63.00c to 80.00c  
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+ % Fe 83.00c to 114.50c  
Aluminum 31.50c  
Brass, 10 ton lots 30.00c to 33.25c  
Copper, electrolytic 10.75c plus metal value  
Copper reduced 16.00c plus metal value  
Cadmium, 100-199 lb 35c plus metal value  
Chromium, electrolytic, 99% min., and quantity, del'd 32.50c  
Lead 7.50c to 12.00c plus metal value  
Manganese 57.00c  
Molybdenum, 99% 32.75c  
Nickel, annealed 95.00c  
Nickel, unannealed 92.00c  
Silicon 38.50c  
Solder powder, 7.00c to 9.00c plus metal value  
Stainless steel, 302 83.00c  
Stainless steel, 316 11.10c  
Tin 14.00c plus metal value  
Tungsten, 99% (65 mesh) 86.00c  
Zinc, 10 ton lots 23.00c to 30.50c



## Ferroalloy Prices

### Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk in carloads delivered, (65-72% Cr, 2% max. Si.)

0.06% C	30.50	0.20% C	29.50
0.10% C	30.00	0.50% C	29.25
0.15% C	29.75	1.00% C	29.00
2.00% C			28.75
65-69% Cr, 4-9% C			22.00
62-66% Cr, 4-6% C, 6-9% Si			22.60

### S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads	21.60
Ton lots	23.75
Less ton lots	25.25

Low carbon type: 62-68% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

Carloads	27.75
Ton lots	30.05
Less ton lots	31.85

### High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

### Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C	\$1.14
0.50% max. C	1.10
9 to 11% C	1.08

### Low Carbon Ferrochrome Silicon

(Cr 34-41% Si 42-49% C 0.06% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed: lump 4-in. x down, bulk 2-in. x down, 21.75¢ per lb of contained Cr plus 12.40¢ per lb of contained Si.

Bulk 1-in. x down, 21.90¢ per lb contained Cr plus 12.60¢ per lb contained Si.

### Calcium-Silicon

Contract price per lb of alloy, dump delivered.

80-33% Ca, 60-65% Si, 3.00% max. Fe.

Carloads	19.00
Ton lots	22.10
Less ton lots	28.60

### Calcium-Manganese-Silicon

Contract prices, cents per lb of alloy lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	20.00
Ton lots	22.30
Less ton lots	23.30

### CMSZ

Contract price, cents per lb of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50.56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

Ton lots	20.75
Less ton lots	22.00

### SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots	17.50
Less ton lots	19.50

### V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5: 38-42% Cr, 17-19% Si, 6-11% Mn.

Ton lots	16.50
Less ton lots	17.75

### Graphidex No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, SI 48 to 52%, TI 9 to 11%, Ca 5 to 7%.

Carload packed	18.00
Ton lots to carload packed	19.00
Less ton lots	20.50

### Ferromanganese

78-82% Mn, maximum contract base price, gross ton, lump size.

F.o.b. Niagara Falls, Alloy, W. Va., Ashtabula, O.

F.o.b. Johnstown, Pa.

F.o.b. Sheridan, Pa.

F.o.b. Etta, Clairton, Pa.

Add \$2.80 for each 1% above 82% Mn, subtract \$2.80 for each 1% below 78% Mn.

Briquets—Cents per pound of briquet, delivered, 65% contained Mn.

Carload, bulk	12.45
Ton lots, packed	14.05

### Spiegeleisen

Contract prices gross ton; lump, f.o.b.

	15-19% Mn	19-21% Mn
	3% max. Si	3% max. Si

Palmerton, Pa.	\$84.00	\$85.00
Pgh. or Chicago	84.00	85.00

### Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

96% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed	36.95
Ton lots	38.45

### Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	30.00
Ton lots	32.00

Less ton lots \$34.00 to \$37.00

### Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton	Less
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0.07% max. C, 0.06% P, 90% Mn	28.45	30.30	31.50
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0.07% max. C	27.95	29.80	31.00
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0.15% max. C	27.45	29.30	30.50
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0.30% max. C	26.95	28.80	30.00
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0.50% max. C	26.45	28.30	29.50
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0.75% max. C, 80-85% Mn, 5.0-7.0% Si	23.45	25.30	26.50
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### Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn

21.85¢

### Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.

Carload bulk	11.40
Ton lots	13.05

Briquet, contract basis carlots, bulk delivered, per lb of briquet

12.65	
Ton lots, packed	14.25

### Silvery Iron (electric furnace)

SI 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$95.50 gross ton, freight allowed to normal trade area.

SI 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$93.00. Add \$1.055 per ton for each additional 0.50% Si up to and including 17%.

Add \$1.00 for each 0.50% Mn over 1%.

### Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.

96% Si, 2% Fe	18.00
97% Si, 1% Fe	18.50

### Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 2 lb Si briquets.

Carloads, bulk	6.95
Ton lots	8.65

### Electric Ferrosilicon

Contract price, cents per pound contained Si, lump, bulk, carloads, delivered.

25% Si	20.00	75% Si	14.30
50% Si	12.40	85% Si	15.55
90-95% Si			17.00

### Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
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Ton lots	\$2.05	\$2.95	\$3.75
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Less ton lots	2.40	3.20	4.55
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### Ferrovandium

35-55% contract basis, delivered, per pound, contained V.

Openhearth	\$3.00-\$3.10
Crucible	3.10-3.20
High speed steel (Primos)	3.20-3.25

Alsiifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.

Carloads	9.90
Ton lots	11.30

Calcium molybdate, 46.3-46.6% f.o.b. Langeloth, Pa., per pound contained Mo

\$1.15
--------

Ferrocolumbium, 50-60% 2 in. x D, contract basis, delivered per pound contained Cb.

Ton lots	\$4.90
Less ton lots	4.95

Ferro-Tantalum-Columbium, 20% Ta, 40% Cb, 0.30 C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta

\$3.75
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Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo

\$1.32
--------

Ferrophosphorus, electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$3 unitage, per gross ton

\$65.00	
10 tons to less carload	\$75.00

Ferrotitanium, 40% regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti

\$1.35
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Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti

\$1.50	
Less ton lots	1.55

Ferrotitanium, 15 to 18%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton

\$177.00
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Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W5, ton lots, delivered

\$5.00
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Molybde oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa.

\$1.14
--------

bags, f.o.b. Washington, Pa., Langeloth, Pa.

\$1.13
--------

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound

Carload, bulk lump	14.50¢
Ton lots, bulk lump	15.75¢
Less ton lots, lump	16.25¢

Vanadium Pentoxide, 86 - 89% V<sub>2</sub>O<sub>5</sub>, contract basis, per pound contained V<sub>2</sub>O<sub>5</sub>

\$1.28
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Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.

Ton lots	21.00¢
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Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy.

Carload, bulk	7.00¢
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### Boron Agents

Borostil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B.

\$5.25
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Bortam, f.o.b. Niagara Falls

Ton lots, per pound	45¢
Less ton lots, per pound	50¢

Corbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.

Ton lots, per pound	10.00¢
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Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots

\$1.20
--------

F.o.b. Wash., Pa.; 100 lb up

10 to 14% B	.85
14 to 19% B	1.20
19% min. B	1.50

Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.

No. 1	\$1.00
No. 6	68¢
No. 79	50¢

Manganese - Boron, 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd

Ton lots	\$1.46
Less ton lots	1.57

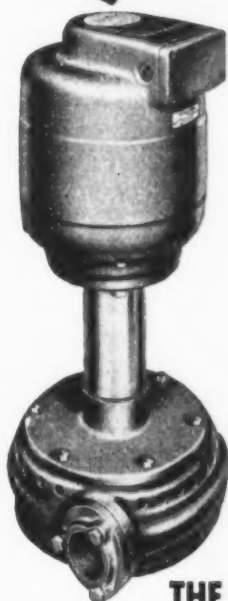
Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered

Less ton lots	\$1.30
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Silenz, contract basis, delivered.

Ton lots	45.00¢
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by



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Here is why leading machine tool manufacturers continually use Gusher Pumps as standard equipment on their machines. Gusher Pumps deliver instantaneous coolant flow . . . no packing or priming is necessary . . . pre-lubricated heavy-duty ball-bearings require no further attention . . . maintenance cost is cut to a minimum. Electronically balanced rotating assembly plus overall simple construction reduces wear.

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### BELT GRINDING UNIT

Hill Clutch & Machine & Fdy. Co. Open Side Abrasive Belt Grinding Unit. Designed to accommodate slabs up to 3/4" thick x 30" wide x 30" long.

### BRAKE—LEAF TYPE

14" x 3/4" Dreis & Krump Leaf Type Bending Brake, Motor Driven with 40 H.P. A.C. Motor.

### BUILDING

72'6" x 140' Steel Building—NEW—Designed for Corrugated Steel Siding and to carry load of 30 ton overhead electric traveling crane.

### CHARGING MACHINE

6000 lb. Brosius Floor Type Gasoline Driven Charging Machine. Equipped with Peel, Gasoline Engine, Rubber Tires.

### CRANE—GANTRY

5 ton Whiting Two Leg Gantry Crane 52 Ft. Span Cab Control. Three Motors 220 v. 3 ph. 60 cy.

### FLANGING MACHINE

3/4" McCabe Pneumatic Flanging Machine. Pneumatic Holdowns, Circle Flanging Attachment.

### FORGING MACHINE

5" Ajax Forging Machine or Upsetter, Motor driven. Equipped with Air Clutch.

### FURNACES—Melting

400 lb. Moore Type "UT" Melting Furnace Top Charge. Complete with Transformer. New 1943—Little Used.

15 ton Haroult Model V 12 Electric Melting Furnace Top Charge hydraulically operated. Complete with Transformer Equipment.

35 ton Moore Size "NT" Melting Furnace, with 7500 KVA Transformer 13 200 vo. 3 ph. 60 cy.

### HAMMER—STEAM DROP

35 ton Steam Drop Hammer. Operated by Steam or Compressed Air.

### LEVELER—ROLLER

60" Aetna-Standard Roller Leveler, Motor Driven. 17 Rolls 4 3/8" Dia.

### PLANERS

48" x 48" x 20' Cincinnati, Four Head

48" x 48" x 12' Niles-Bement-Pond, Four Head

60" x 60" x 12' Niles-Bement-Pond, Four Head

72" x 72" x 12' Niles-Bement-Pond, Four Head

### PLATING MACHINE

Type "B" Crown Full Automatic, Nickel & Chrome Plating Machine. Max. Work Size 16" wide x 36" deep x 4" thick.

### PRESS—BRIQUETTING

Model BL-350 Milwaukee Hydraulic Briquetting Press. Complete with Pumps. Capacity Grey Iron Briquettes 3 1/2 tons per hr.

### PRESS—KNUCKLE JOINT

1000 ton Bliss #27 Knuckle Joint, Embossing & Coining Press, 2 1/2" stroke, 18" Shut Height.

### PRESSES—TRIMMING

1500 ton Hydraulic Bending & Trimming Press. Distance between columns 86" x 86".

2500 ton Hydraulic Bending & Trimming Press. Distance between columns 90" x 108".

### ROLLING MILLS

8" x 10" Schmitz Single Stand Two High With Friction Drive Rewinder.

12 1/2" x 16" Philadelphia Two High Cold Rolling Mill. Complete with Pinion Stand, 75 H.P. Motor 440/3/60. Starter and Controls, Incl. Collar.

18" x 24" Waterbury Farrel Two Stand Two High Rolling Mill. Complete with Elec. Equip.

18" x 60" Three High Roughing Mill. Complete with billet heating furnace and accessory equipment including electrical equipment.

27" x 56" United Two High Skin Pass Mill

### STRAIGHTENERS

No. 3 Medart 3-Roll Straightening Machine Capacity 1" to 3 1/2" Bars or 4 1/2" O. D. Pipe or Tubing. NEW 1950.

No. 18 Sutton Round Straightener. Motor Drive. Capacity 3/16" to 3/4" O.D. Friction Drive complete with 1/3 H.P. A.C. Motor.

### TESTING MACHINES

20,000 lb. Southwark-Emery Universal Hydraulic Testing Machine.

300,000 lb. SOUTHWARK-EMERY Universal Hydraulic Testing Machine.

### UNIVERSAL IRONWORKERS

Ryerson Steel Frame Universal Iron Worker. M.D. Capacity Punch 3/4" thru 3/8" Shear 1" Square 1 1/4" Round, 1/2" x 4" Flat, 4 x 4 x 1/4" Angles.

No. 28U-30 Buffalo Armor Plate Universal Ironworker—Combination Punch, Shear & Bar Cutter. Motor Driven Capacities—Shear 3" Round, 2 1/4" Square, 5x1 1/2" Flat, 5x5 1/2" Angles 12" — 3 1/2" Beams, etc., Punch 1 1/2" thru 1 1/4".

### RITTERBUSH & COMPANY, INC.

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# The Clearing House

## NEWS OF USED, REBUILT AND SURPLUS MACHINERY

Always a Market—Machinery importers recently returned from machinery shows at Hanover, Germany and London are convinced there will always be a U. S. market for European machine tools (THE IRON AGE, Oct. 23, 1952, p. 51).

Knowing that America's mad scramble for machine tools is at an end, the foreign manufacturers are doing their utmost to make their equipment as appealing as possible to U. S. customers. If they are successful in keeping the trade door open, it will, of course, mean continued competition for used machinery dealers here.

But dealers who handle foreign equipment in addition to a regular line of used machinery may find it an advantage. To maintain a machine tool market in the U. S. the foreign manufacturers will have to keep on improving their product. This means U. S. dealers will be stocking more salable imports.

Trends—At a recent press conference in New York, arranged by the American Assn. of Machinery Importers, Irwin Lubalin, general manager, International Machinery Div., British Industries Corp., commented on machine tool trends evidenced at the Olympia Show in London. He said he noted many new specialized machine tools designed for jet engine component production. In addition, European manufacturers are now using flame-hardened ways and switching from scraping to slideway grinding and even slideway milling.

Standout feature of the Swiss machines displayed, Mr. Lubalin said, was their extremely accurate and superbly finished jig borers and measuring machines. An improvement observed in the Societe Genevoise equipment was the replacement of microscopic eyepieces by viewing screens for table and slide settings.

Speeded Spindles—As was true of most foreign machine tools, few design changes have been made in the Swiss equipment. However, Mr.

Lubalin said spindle speeds have been increased on the Bechler, Peterman and Tournos automatic screw machines as well as on the more conventional Tarex and Manurhin units. Maag showed a new model KS42 bevel gear grinding machine which employs a generating motion with two grinding wheels and steplessly variable hydraulic wheel slide speeds.

Simplicity of design and low cost were the main attractions of the British machine tools. Colchester displayed a line of rugged, inexpensive geared head engine lathes, built to U. S. toolroom limits and specifically designed for the American market with ANC threads and NEMA electrical equipment. These units featured new SKF machine tool spindle bearings, increased hp, higher spindle speeds and finer feeds, Mr. Lubalin stated.

British Bargains—He estimated prices of British machine tools averaged about 40 pct less than American equivalents. If sold over here, British machines would still be 15 pct under our prices, he stated.

It is Britain's hope to balance machine tool exports and imports from the U. S., Mr. Lubalin said. He estimated the value of British machine tool production at \$12 million per month as compared with the U. S. rate of \$100 million per month. At best, Britain can only export 10 pct of its output to the U. S. which would amount to little more than 1 pct of our consumption.

Off the Floor—Resurgence of the West German machine tool industry impressed all the importers reporting on the machine tool shows. Germany's interest in machinery exports is stressed by the fact that 40 pct of its production is now going outside Germany.

Though the U. S. is not yet one of Germany's major markets, exports to America increased seven times between 1950 and 1951. A record high is expected this year.



# THE CLEARING HOUSE

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### AIR COMPRESSORS

14" x 12" Pennsylvania Air Compressor, 100# Pressure, Complete with 75 H.P. Syn. Motor  
18" x 11" x 14" Sullivan W-3 Air Compressor 886 CFM. Driven by 150 H.P. Westinghouse Syn. Motor 440/3/60

### BAR TURNING MACHINE

Medart H-F-2 Bar Turning Machine, Capacity 1" to 2 1/2". Complete with Accessories

### BENDING ROLLS

6" x 1/2" Ryerson Pyramid Type Bending Roll  
20" x 1" Southwark Pyramid Type Bending Roll  
30" x 1" Southwark Pyramid Type, Motor Driven

### BRACKS—LEAF TYPE

8" x 1/2" Dreis & Krump Leaf Type Bending Brake Motor Driven with 5 H.P. A.C. Motor  
12" x 3/16" Chicago #226 Steel Apron Brake, M.D.  
18" x 1/2" Dreis & Krump Leaf Type Bending Brake, Motor Dr. with 40 H.P. A.C. Motor

### BUILDING

72'6" x 140' Steel Building—NEW—Designed for Corrugated Steel Siding—and to carry load of 80 ton Overhead Electric Traveling Crane

### BULLDOZER

89 Williams White Bulldozer, Motor Dr. with 50 H.P. Motor, 440 volt, 3 phase, 60 cycle, Face of Crosshead 20" x 90" Movement of Crosshead 24"

### CHARGING MACHINE

4000 lb. Brosius Floor Type Gasoline Driven Charging Machine, Equipped with Peel, Buda Gasoline Engine, Rubber Tires

### CRANES—GANTRY

5 ton Whittling Two Leg Gantry Crane 53' Span Cab Control, Motors 220 v. 3 ph. 60 cy.  
15 ton P&H Two Leg Gantry Crane 45' Span With 18' Overhang one end, 10' other end 5 ton Auxiliary, Two Trolleys and 5 Motors, 440 volt 3 phase 60 cycle

### CRANES—OVERHEAD ELECTRIC TRAVELING

5 ton Robbins Myers	25'6" Span 220/3/60
10 ton Shaw	47' Span 230 Volt D.C.
10 ton P. & H.	40' Span 440/3/60 AC
10 ton Erie	40' Span 440/3/60 AC
15 ton Niles	60' Span 230 Volt D.C.
15 ton Toledo	48' Span 220/3/60
20 ton Bedford	50' Span 220/3/60 AC
20 ton Morgan	68' Span 230 Volt DC

With 5 ton Auxiliary

### DIEING MACHINES

75 ton Henry & Wright High Speed Dieing Machine Double Roll Feed, Scrap Cutter 3" Stroke  
100 ton Henry & Wright Dieing Machine, 4" Stroke, 18" Shut Height, Complete Elec. Equip.

### DIE CASTING MACHINES

Model BA-13 KUX Die Casting Machine, Air operated, Plunger Gooenack Type for zinc, lead and tin. Die space between bars 1 1/2" x 1 1/2". Die Reparat 8" NEW 1910, never used  
Pawl & Whitney Type HL-2416 Single Spindle 3-Dimensional Keller Machine, with complete electrical equipment and accessories

### DRAW BENCH

50,000 lb. Draw Bench, Motor Driven with 50 H.P. Motor, Maximum Draw 40 ft.

### FLANGING MACHINE

1/2" McCabe Pneumatic Flanging Machine, Pneumatic Holdowns, Circle Flanging Attachment

### FORGING MACHINES

1 1/2" x 3" x 4" Ajax  
1 1/2" x 3" x 5" Ajax  
3 Ajax—Air Clutch

### FURNACE—ANNEALING

Furnace Engr. Co. Bell Type Annealing Furnace Gas Fired, Operating Space 40"x40" Round, 500 CFM Capacity.

### FURNACE—HEATING

60 KW Leeds & Northrup Homo Furnace #9478-11B-38, with Control Work space 23" dia. x 38" deep

### FURNACES—MELTING

400 lb. Moore Type "UT" Melting Furnace, Top Charge, Complete with Transformer, New 1943—Little Used  
18 ton Heroult Model V-12 Ton Charge Hydraulically Operated, Complete with Transformer Equip.

### GEAR REDUCERS

500 H.P. United Combination Reduction Gear & Pinion Stand, Gear Ratio 2.581:1  
400 H.P. Farrel Birmingham, Size 18 Reduction Gear, Ratio 720 to 244 RPM  
700 H.P. Falk Hinge Reduction Gear, Ratio 875 to 200 RPM  
1500 H.P. Mesta Gear Reduction Unit, Ratio 19:1

### GRINDER

No. 4 Cincinnati Centerless Grinder, Motor Driven, Capacity standard work rest 2" to 6" dia., optional work rest 1/2" to 2". Special fixtures will allow work to be handled up to 9" dia.

### GRINDER—CYLINDRICAL

14 x 56" Norton Type C, Complete with Elec. Equip

### HAMMERS—BOARD DROP

1200, 1600, 4000 lb. Model J2 Chambersburg

### HAMMERS—STEAM DROP

1500, 4000 lb. Erie  
35 ton Steam Drop Hammer, Operated by Steam or Compressed Air

### HAMMERS—STEAM FORGING

1200 lb. Maxillon Single Frame  
1500, 1600, 2000, 3000, 4000 lb. Chambersburg  
600, 1500, 2500 lb. N.B.P.  
600, 1100, 1500, 2000, 2500, 3500, 4000 Erie  
20,000 lb. Massey Steam Forging Hammer

### HAMMERS—MISCELLANEOUS

No. 6N Naxel Hammer, Geared Motor Drive  
200 lb. Bradley Compact Hammer, Arr. for Motor Drive with 18 H.P. A.C. Motor  
3000 lb. Chambersburg Pneumatic Hammer Complete with Elec. Equip. New 1951  
15"x12" Chambersburg Cocostamp Hammer, 18" stroke

### LATHE—TURRET

Model 2L Gisholt Geared Head Turret Lathe, Spindle Bore 4-1/16". Elec. Equipment and numerous accessories incl. NEW 1951

### LEVELER—ROLLER

60" Aetna Standard 17-Roll Leveler, 4 1/2" Dia. Rolls Arr. Motor Drive

### MOTORS

1250 H.P. Westinghouse Induction Motor 6600 volt 3 phase 60 cycle 593 R.P.M.  
2000 H.P. General Elec. Induction Motor 6600 volt 3 phase 60 cycle 600 R.P.M.  
2500 H.P. General Elec. Direct Current Motor 6600 volt 175/330 R.P.M.

### MOTOR GENERATOR SET

740 H.P. General Electric Syn. Motor 4400 volt A.C. with two generators 750 KVA 230 volt D.C., Complete with Panel Board, etc.

### NAIL MAKING MACHINES

No. 1 1/2 National—Sizes 10D, 12D, 16D, 20D, 30D  
No. 3 National—Size 6D  
No. 2 Glader—Sizes 6D, 7D, 8D, 9D  
Angeli—Sizes 10D, 12D, 16D, roofing

### PLANER—PLATE EDGE

30" x 1 1/2" Southwark Plate Edge Planer, Motor Driven, Equipped with 16 Pneumatic Jacks

### PRESSES—EXTRUSION

700 ton Horizontal Extrusion Press, 3-Column Type Ram 26" Diameter, Container suitable for billets 3" x 30"  
1200 ton Horizontal Extrusion Press, 3 Column Type Ram 34" Diameter, Suitable for billets 6" dia. x 22" long

WE OFFER A COMPLETE LIQUIDATION SERVICE ON ANY BASIS WHICH CIRCUMSTANCES INDICATE WOULD BE MOST BENEFICIAL, WHETHER BY AUCTION, PRIVATE LIQUIDATION OR OUTRIGHT SALE

CONSULTANTS IN MANUFACTURING PROBLEMS FOR OVER A QUARTER OF A CENTURY

THERE IS NO SUBSTITUTE FOR EXPERIENCE

CONTACT US IN CONFIDENCE WITHOUT COST OR OBLIGATION

### PRESSES—HYDRAULIC

Model BL-350 Milwaukee Hydraulic Briquetting Press Complete with Pumps, Capacity Grey Iron Briquettes 3 1/2 tons per hr.

75 ton Williams White Straightening Press, 27" Stroke, Bed 8" x 18" 6 1/2" Dia. Ram  
200 ton Bliss Hydrodynamic 48" Stroke Bed Area 24" x 24", Hyd. Pump Incl.  
500 ton Southwark Hydraulic 24" Stroke, 78" Daylight Platen 64" R to L x 32" F to B  
500 ton Southwark Open Throat Hydraulic Press 12" Stroke Platen 58" x 50"  
700 ton Elmes Forming Press, 27" Stroke, 30" Dia. Ram, Platen 40" x 88" with overhang 40" x 129", Complete with Pump and Motor

### PRESS—HYDRAULIC WHEEL

100 ton Elmes Inclined Hyd. Wheel Press 72" Between Parallel Bars, Complete with Pump & Motor

### PRESS—KNUCKLE JOINT

27 Bliss Knuckle Joint Embossing & Coining Press 1000 ton Capacity, 2 1/2" Stroke, 18" Shut Height

### PRESSES—STRAIGHT SIDE

No. 87A Bliss 250 Ton Capacity, Double Geared 32" Stroke, 30" x 33" Bed Area, Air Cushion  
No. 303 Bliss 9" Stroke 14" Shut Height Equipped with Marquette Air Cushion  
No. 59 Toledo Double Geared Tie Rod Press 255 ton Friction Clutch 18" Stroke 36 1/2" x 35" Bed Area  
No. 3 Ferracute Super Speed Punch Press 30 ton Capacity, NEW 1946—never used  
No. 875B Bliss Single Geared 1 1/2" Stroke, Double Roll Feed & Chopper, 10 H.P. A.C. Motor  
No. 620 Bliss High Production Press, 1 1/2" Stroke 81-40 Verson 200 ton Press, 30" Stroke Bed Area 40" x 44"  
No. 12 Zeh & Hahnemann Patent Percussion Press 150 ton 12" Stroke, 17" x 17" Bed Area  
No. 10-E Bliss 800 Ton, 10" Stroke Bed Area 60" x 126"  
No. 7 Bliss 400 Ton 8" Stroke Bed Area 48" x 108"  
No. 1037-5/8 Hamilton 300 Ton 18" Stroke Bed Area 48" x 104"  
No. 93 1/2 Toledo 175 Ton, 6" Stroke Bed Area 40" x 72"  
No. 606 1/2 Hamilton 165 Ton, 12" Stroke Bed Area 36" x 60"  
No. 93 1/2 Toledo 150 Ton, 8" Stroke Bed Area 36" x 54"  
1500 ton Hydraulic Bending & Trimming Press, Distance between columns 86" x 86"  
2500 ton Hydraulic Bending & Trimming Press, Distance between columns 90" x 108"

### PRESSES—TRIMMING

Bliss S.S. Trimming Press with Side Shear, 250 Ton Capacity, 8" Stroke 52" x 30" Bed Area  
No. 3 Erie Flywheel Drive Trimming Press, 3 1/2" Stroke 13" Between Guides  
No. 12 Erie Trimming Press, 100-150 Ton

### PUNCH—BEAM

Long & Allistatter Double End Beam Punch, Capacity Beam Punch End—Punch flanges and web 2 1/2" I-beam and smaller

### PUNCH & SHEAR COMBINATIONS

Ryerson Steel Frame Universal Ironworker, M.D. Capacity Punch 1/2" thru 1/2" Shear 1" Square, 1 1/2" Round, 1 1/2" x 4" Flats 4 x 4 1/4" Angles  
No. 28 U-30 Buffalo Armor Plate Universal Ironworker, Capacity Punch 1 1/2" thru 1 1/2" Shear 3" Round 3 1/2" Square, 5 x 1 1/2" Flat, 5 x 3 1/2" Angles  
Style EP Cleveland Single End Punch & Shear, M.D. Capacity Punch 1" thru 1 1/2"

### RIVETER

125 ton Hanna Bull Riveter, Air Driven, 24" Gap, 75" Reach, Capacity 1" rivets cold and 1 1/2" rivets hot

### ROLL—PLATE STRAIGHTENING

7 Roll Bertsch Plate Straightening Machine, Capacity 10" x 1/2", Complete Elec. Equip.

### ROLLING MILLS

7 1/2" Steckel Four High Rolling Mill, Max. Steel Width 6", Work Rolls 2 1/2" x 7 1/2", Complete with electrical equipment  
8"x10" Schmitz Single Stand Two High  
12"x18" Single Stand Two High, Comp. with Elec. Equip.  
12"x24" Waterbury Farrell Two High  
15"x30" Mossberg Single Stand Two High  
18"x24" Waterbury Farrell Two Stand Two High  
20"x30" Two Stand Two High Rolling Mill  
20"x36" Poole Two Stand Two High  
22"x40" Single Stand Two High  
27"x56" United Two High Skin-pass Mill  
28"x60" Single Stand Two High  
18"x60" Three High Roughing Mill, Complete with billet heating furnace and accessory equipment incl. elec. equip.

### ROLL—TAPER FORGING

No. 60 Williams White Taper Forging Roll, Rolls 24" Dia., Shaft 8" Dia.

### SAWS

No. 3 Ryerson Friction Saw, 54" Blade Hydraulic Feed, Complete with Elec. Equip.  
58" Ryerson Friction Saw, 45 H.P. Motor Capacity Approx. 9" Round, 20" I-beam, 12" H-beam

### SHEAR—ALLIGATOR

No. 7 Thomas Carlin Alligator Shear, 18" Blade 30 H.P., D.C. Motor

### SHEARS—ANGLE

Hilles & Jones No. 2 Double Angle Shear, M.D. Capacity 6" x 6" x 1/2"  
Long & Allistatter Double Angle Shear, Model B, Capacity 6"x6"x 1/2", Complete with Elec. Equip.

### SHEAR—BAR

No. LH Lewis Open End Bar Shear, Motor Drive Capacity 1 1/2" Round

### SHEAR—GATE

10"x12" Cincinnati Model 10018 Gate Shear, New 1944—Little Used

### SHEARS—ROTARY

No. 60 Quickwork Rotary Shear, 1/2" Capacity  
No. 100 Kling Rotary Shear, 1" Capacity  
No. 30 Quickwork Rotary Shear, 5/16" Capacity  
Quickwork Heavy Duty Circle Shear 4 1/2" Capacity Complete with Circle Cutting Attachment

### SHEARS—SQUARING

12"x14" Stance Steel Squaring Shear, Motor Dr. 8" x 1 1/2" Drabert Model THZ 6/2500  
6" x 1 1/2" Long & Allistatter, Belted Motor Drive

### SLITTERS

21" Yoder Sheet Slitter No. 539, Capacity 8 cuts 194" to 8 Cuts 156", Motor Dr.  
72" Yoder Gang Slitter, Capacity 5 Cuts 30 Ga.

### STRAIGHTENERS

No. 3 Medart 3-Roll Straightening Machine Capacity 1" to 3 1/2" bars or 4 1/2" O.D. Pipe or Tubing, NEW 1950  
No. 1 1/2" Sutton Round Straightener, Motor Dr. Capacity Tubing 5/16" to 2 1/2"—modified to handle up to 3 1/2" O.D. tubing  
No. 1B Sutton Round Straightener, Motor Drive Capacity 3/16" to 1/2" O.D. Friction Drive complete with 1/3 H.P. A.C. Motor  
Hallden 8-Roll Strip Straightener & Cutting Machine, Capacity 14" wide 11 Ga. Sheet Steel

### STRETCHER

McKay Hydraulic Bar Stretcher, Capacity up to 1 1/2" dia. in lengths 12' to 27'

### SWAGING MACHINES

No. E1 Langelier, Capacity 1 1/2" Tubing  
No. 408 Elma Swager, Capacity 4" Tubing

### TESTING MACHINES

300,000# Southwark Emery Universal Hydraulic  
20,000 lb. Southwark Emery Universal Hydraulic

### WELDERS

250 KVA Progressive Model A-6 Flash Welder 44 volt 60 cycle, Mechanical Contactor HI-Pressure Clamp Assembly—NEW 1949  
McKay Tube or Pipe Welding Unit, Capacity 4 1/2" to 7 1/2" O.D. Complete with all accessory equipment and motors

### WIRE DRAWING MACHINE

No. 0 Waterbury Farrell 7-Die Wire Drawing Machine, Capacity 1/2" rod to #10 copper

• Manufacturing

**ITTERBUSH & COMPANY, INC.**

50 CHURCH ST., NEW YORK CITY 8

Telephone: Cortlandt 7-3437

Equipment

Consulting Engineering Service  
Surplus Mfg. Equipment Inventories Purchased

Confidential Certified Appraisals  
Liquidations — Bona Fide Auction Sales Arranged

October 30, 1952

# THE CLEARING HOUSE

## MILES' QUALITY

AIR COMPRESSOR, 21"x13"x16" Worthington  
AUTOMATIC, 20"x25" Fay (1942)  
AUTOMATIC, 8" Bullard Multi-Au-Matic, 6-spindle  
AUTOMATIC, 6-spindle Baird chucker  
BORING MILL, 4" Detrick & Harvey, horizontal,  
floor type  
BORING MILL, 3" Universal tri-way, duplicator  
BROACH, No. 1 Foote Burt duplex surface  
BROACH, 2-ton American horizontal hydraulic  
BROACH, No. 3XA Oilgear horizontal hydraulic  
BROACH, V42 American hydraulic, 18 ton  
BULLDOZER, No. 22 Williams & White  
DRILL, Nos. 217, 310, 321 Baker  
DRILL, No. 36 HO Baker hydraulic  
DRILL, 24" Cincinnati upright  
DRILL, 24" No. 25 Foote Burt  
DRILL, 12-spindle No. 12 Natco  
DRILL, 12-spindle No. 10 Defiance rail type  
DRILL, No. B 250 H Natco multiple  
DRILL, 36-spindle Bausch, adjustable spindle  
DRILL, RADIAL, 3 1/2", 8" American sensitive  
GEAR HOBBER, No. 12H G&E  
GEAR HOBBER, No. 130 Cleveland Rigidhobber  
GEAR HOBBER, No. 3 Adams Farwell  
GEAR HOBBER, No. 12 & Type A Barber Colman  
GEAR HOBBER, Nos. 1 and 25 SA Lees Bradner  
GEAR SHAVER, 8"x12" Red Ring  
GRINDERS CENTERLESS, Two No. 2 Cincinnati  
GRINDER, 6"x30" Cincinnati, type ER, infed  
GRINDERS, 10" x 18" & 10" x 36" Norton Semi-  
Auto  
GRINDER, DISC, 30", No. 8 Badger  
GRINDER, DISC, No. 228 Hanchett opposed  
GRINDER, DISC, No. 84A Gardner opposed  
GRINDER, Internal, Bryant Nos. 5, 16A, 16-28 &  
24-36  
GRINDERS, INTERNAL, Nos. 72A3 and 72A5  
Heald  
GRINDERS, SURFACE, 12" and 16" No. 22 Healds  
GRINDER, SURFACE, No. 78 Wilmarth & Morman  
HAMMER, Nos. 5N & 6B Nazel pneumatic  
HAMMER, 40 lb. Bradley helve  
HONE, Nos. 172 & 2610 Barnes hydraulic  
LATHE, ENGINE, 24"x14" American  
LATHE, ENGINE, 30"x16" LeBlond  
LATHE, TURRET, No. 5 Acme universal  
LATHE, TURRET, No. 5 Gisholt universal, 1943  
LATHE, TURRET, No. 6 W&S, G, H, motor-in-base  
MILLERS, Two No. 2 Cincinnati plain  
MILLERS, Nos. 1, 2 and 3 Kent Owens hand  
MILLER, 18" Cincinnati automatic  
MILLER, 24" Cincinnati automatic duplex  
MILLER, type 45 Product-O-Matic  
MILLER, 30 1/2" x 21" x 12" Ingersoll 4-spindle  
planer type  
MILLER, 48" x 20" x 20" Ingersoll planer type,  
3 vertical heads  
MILLER, 48" x 36" x 12" Ingersoll planer type  
adj. rail  
MILLER, 54" Ingersoll 6-spindle rotary continuous  
MILLER, PLAIN, No. 3B Milwaukee  
MILLER, THREAD, Type C Hall planetary  
MILLER, THREAD, Nos. 4, 6 and CT 36 Lees  
Bradner  
PLANNER, 36"x36"x8" Cleveland openside  
PLANNER, 36"x36"x12" Niles Bement Pond  
PRESSES, Nos. P01, P1, P2, P3, PA4, P5 and  
CA4 Ferracute  
PRESS, No. 61 Cleveland OBI  
PRESS, No. 6 Toledo OBI  
PRESSES, Nos. 56 & 56 1/2 Toledo  
PRESS, No. 245 1/2 Hamilton s.s. tiered frame  
PRESS, No. EG54 Ferracute knuckle joint  
PRESS, 600 ton No. 570 Toledo forging  
PRESS, No. DA8411 Hamilton double action toggle  
draw  
PRESS, 100 ton HPM hydraulic  
RIVETERS, large variety  
ROLL, 20"x3/16" Farnham bending  
SLOTTER, 16" Bement Miles crank  
SAWS, Three 816S Kalamazoo metal cutting band  
SAW, 7" No. 14 Higley cold-cutting  
SAWS, three L-W (Toledo) power hack, new  
SHAPER, 32" Ohio Dreadnaught  
SHAPER, 27" Morton draw cut  
SHEAR, 38" throat No. 17F New Duty  
STRAIGHTENER, No. 0 Sutton for bars  
TAPPERS, Two No. 71 Etico  
TAPPER, 19" Hammond sensitive drilling & tapping  
TESTER, 230,000 inch-pound Tinius-Olsen No. 2  
torsion  
TESTER, 100,000 lb. Riehle tensile & compression  
THREADERS, 2" Landis pipe threading and cutting  
THREADERS, Two 3/4" Landis, double spindle  
THREADERS, 2" Oster rotary head  
UPSETTER, 3" National air clutch  
UPSETTERS, Two 4" Ajax heavy duty, twin-gear  
WELDER, 100 KVA Thompson automatic spot  
WELDERS, 12" and 14", 12 KVA American Elec-  
tric Fusion Co. spot

WRITE FOR CATALOG NO. 193 FOR COMPLETE LISTING  
**MILES MACHINERY CO.**

2025 E. Genesee Ave.  
SAGINAW, MICHIGAN

## RE-NU-BILT GUARANTEED ELECTRIC POWER EQUIPMENT D.C. MOTORS

QTY.	H.P.	Make	Type	Volts	RPM
1	2200	G.E.	MTF	800	400/500
1	1750	Whae		800	550/700
1	1500	Whae		525	600
1	940	Whae	QM	350	140/170
1	600	Al. Ch.		250	400/800
1	500	Whae	CC-218	600	800/900
1	450	Whae		550	415
1	400	G.E.	MC	800/1050	
1	350	Cr. Wh.	CM-151H	280	1100
1	335	Whae	MQ	250	300/900
1	300/300	G.E.	MPC	230	800/920
1	200	Rel.	19707	230	720
1	150	G.E.		600	350/750
1	150	Cr. Wh.	45H	230	1150
10	150	Cr. Wh.	83H-TEFC	230	900
3	150	Whae	SK151H	230	900/1800
1	150	Whae	SK 201	230	880/950
1	50/120	G.E.	MC	230	250/1000
3	100	Whae	SK-181	230	450/1000
1	100	G.E.	CD-175	230	365/730
1	100	G.E.	CDP-115	230	1750

### MILL & CRANE

1	50	G.E.	CO-1810	230	725
1	33	Whae	K-8	230	505
3	30	G.E.	MD-104 1/2 AA	550	700
1	20	Whae		230	975
4	15	Whae	K-5	230	630
8	10	C.W.	SCM-AH	230	1150
1	10	G.E.	MD-104	230	400/800
8	8.25	Whae	K-3	230	680
4	8	C.W.	SCM-FF	230	1750
3	8	Whae	HK-2	230	885
1	3 1/4	Whae	K-1	230	835

## A.C. MOTORS

### 3 phase—60 cycle

QTY.	H.P.	Make	Type	Volts	Speed
1	1800	G.E.	MT 49R	2300	370
1	1500	ABB		2300	730
1	1200	G.E.	MP	2300	375
1	500	Whae	CW	550	350
1	500	G.E.	IM	440	900
2	500	G.E.	IM-574-Y	6000	900
1	500	G.E.	IP	550	505
1	400	Whae	CW	440	514
1	350	G.E.	MT 442Y	1200/4000	353
1	300	Al. Ch.		2300	585
1	250	G.E.	MT-424-Y	4000	387
1	250	G.E.	MT-559H	2300	1800
1	250	Al. Ch.		550	600
1	200	Cr. Wh.	36QB	440	505
2	200	G.E.	IM17	550	585
3	200	G.E.	IM-17	440	800
1	200	G.E.	IM	440	485
1	300	G.E.	MTP	440	1170
1	150 (unused)	Whae	CW	2300	435
1	125	Al. Ch.		440	720
4	125	G.E.	MT-560Y	440/2300	485
3	100	G.E.	IM	440	800
5	100	A.C.	ANY	440	495
1	100	G.E.	IM-18	2300	485
1	100	Whae	CW-888A	440	700

### SQUIRREL CAGE

3	450	G.E.	FT-559BY	440	8570
3	450	Whae	CS 1420	1200/4150	354
1	300	Al. Ch.		2300	385
1	200	G.E.	IK-17	440	580
1	300	G.E.	IK	440	885
3	300	G.E.	RT 557	440	1000
1	150	Whae	CS 850H	440	880
1	150	Whae	CR	440	580
1	150/75	G.E.	IK	440	900/450
3	125	Al. Ch.	ARW	2200	1750
1	125	G.E.	KF 832H-Z	440/2300	8545
1	125	Whae	NS	440	485

### SYNCHRONOUS

2	8500	G.E.	TS	2300	357
2	2100	G.E.	ATTI	2300	280
2	1750	G.E.	ATTI	2300	3000
3	2000	Whae		2300	130
3	735	G.E.	ATTI	1200/12000	660
1	450	Whae		2200	450
1	350	G.E.	TS	2300	150

## M-G Sets — 3 Ph. 60 Cy.

QTY.	K.W.	Make	RPM	D.C. Volts	A.C. Volts
2	2000	G.E.	500	600	11000*
1	2000	G.E.	514	600	6600/13200
3	1500	G.E.	514	250	6600/13200
1	1500	G.E.	725	600	6600/13200
1	1500	G.E.	560	275	4400
1	1500	Whae	600	600	4100
3	1000	Whae	800	600	4100
1	1000	G.E.	900	260	6600
1	1000 (RT)	G.E.	900	250	3200
1	750	Whae	900	275	4100
1	500	G.E.	720	125	2800
1	500	Whae	900	125/250	440
1	500	Whae	900	250	6600/13200
1	500	Whae	1200	125/250	3200
1	400	Whae	1200	250	3500
1	400 (RT)	Cr. Wh.	1200	125/250	2500
1	350	G.E.	900	125	2300/4100
1	300	Al. Ch.	1200	125/250	3200
1	150	Whae	1200	275	2800
1	140 (RT)	Cr. Wh.	1200	125/250	440/3200
1	120	Delco	1200	120/240	2800
1	100	G.E.	1170	125	220/440

\* 25 Cycle

## FREQUENCY CHANGER SETS

QTY.	K.W.	Make	Freq.	Voltagess
1	8000	G.E.	25/40	2300/2300/4000
2	2500	G.E.	25/62.5	2300/2300
1	1000	G.E.	25/58.3	4400/2300
1	500	Al. Ch.	2500	11000/2300

**BELYEA COMPANY, INC.**  
47 Howell Street, Jersey City 6, N. J.

## GUARANTEED TOOLS

60"x20" NILES-BEMENT-POND Geared Head  
Engine Lathe, rapid traverse

27"x12" MONARCH Geared Head Engine  
Lathe, taper attachment, AC-MD

24"x72" centers BOYE & EMMES Heavy  
Geared Head Engine, chuck, AC-MD

16"x54" MONARCH Engine Lathe, taper at-  
tachment, collets, chucks, new 1948

No. 28 FOSTER Geared Head Turret Lathe,  
rapid traverse, AC motors

42" BULLARD New Era Type Vertical Turret  
Lathe, AC-MD

36" BULLARD Vertical Turret Lathe con-  
verted to Spiral Drive, AC-MD

1 1/2" LANDIS Double Head Bolt Threader,  
with leadscrews, MD

No. 1 DOUGLAS Plain Horizontal Mill,  
table 8"x32", power feeds, motor in base,  
No. 40 taper, new 1942

No. 2 VAN NORMAN Plain Horizontal Mill,  
power rapid traverse, No. 50 taper, new  
1942

No. 3-24 CINCINNATI Plain Hydromatic  
Mill

5-13" column CARLTON Radial Drill AC  
motor on arm, 15 to 1500 RPM

4" AMERICAN High Speed Sensitive Radial  
Drill 9" column, AC motor on arm

No. 914 W. F. & John BARNES Hydraulic  
Drill, No. 6 Morse taper, 15HP motor, new  
1948

3 Spindle FOSDICK Drill Press, Individual  
AC motors for each spindle, 1942

No. 6 TOLEDO O.B.I. Press, 56 Tons

Brand New Model FH-4C01  
DENNISON Hydraulic Presses, 4  
Ton, 8" throat (3)

10"x24" NORTON Hydraulic Surface  
Grinder, 1942

25A HEALD Rotary Surface Grinder, 24"  
diameter, magnetic chuck

36" OHIO Dreadnaught Shaper, AC-MD

75 Ton HENRY & WRIGHT Double Crank  
Dieing Machine, roll feed & Scrap cutter

No. 22 MURCHEY Threader

No. 135 CLEVELAND Rigidhobbers

**O'CONNELL  
MACHINERY CO.**  
Tel: BAILEY 5800  
1693 GENESEE ST. BUFFALO 11, N.Y.

## IMMEDIATE DELIVERY

BLISS No. 55 Double Action Toggle Draw Press,  
Bed Area 38" x 33", Stroke of Blankholder 10".  
Stroke of Plunger 21", Air Clutch. New in 1945.

BLISS No. 88 Straight Side Single Crank Press,  
Capacity 255 ton, Bed Area 30" x 29", 18"  
Stroke of Slide, Marquette Air Cushion.

TOLEDO Double Cranks, Nos. 91-42, 92C, 93 1/2C,  
93 1/2E.

CLEVELAND Double Cranks 65-G-72, 45-D-60.

NIAGARA Double Cranks, 67C, 68C, 612C.

BLISS No. 25K Knuckle Joint 600 Ton Capacity.

**National Machinery Exchange**  
128 Mott St. New York, N. Y.  
Canal 6-2470

# RAILROAD EQUIPMENT — FOR SALE

**USED**

**AS IS**

**RECONDITIONED**

## STANDARD GAUGE FREIGHT CARS

Box, Double Sheathed, 50-Ton Capacity  
 Box, Single Sheathed, 50-Ton Capacity  
 Flats, 40 & 50-Ton, Steel Underframe, 40'0" long  
 Gondolas, Composite, 40-Ton Capacity  
 Gondolas, Composite or All-Steel, 50-Ton

Hoppers, Covered, All-Steel, 70-Ton  
 Hoppers, Twin, All-Steel, 50-Ton, Cross Dump  
 Hoppers, All-Steel, 70-Ton, Cross Dump  
 Tank, 3,000-Gallon, High Pressure  
 Tank, 8,000-Gallon, Coiled and Non-Coiled

## EXTRA LONG FLAT CARS

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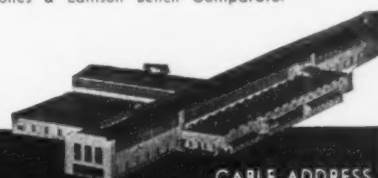
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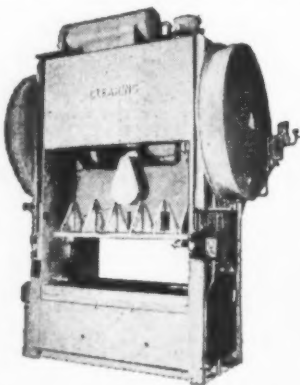
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pacity 6 x 6 x 1".

5" Ajax Upsetting & Forg. Machs. twin  
gears, twin flywheels, susp. slides.

National Upsetting & Forg. Machs. 2", 4".  
Ajax and Acme Upsetting & Forg. Machs.,  
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Niagara Shear, Capacity 3 ft. 3/16".  
Nazel Air Forg. Hammer #6-B, 7" sq.

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Bar Shears, Open End., Table cost on  
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Knuckle Joint Press 200-ton, 6" str.; EG-54  
Ferracite 400-ton.

600-ton R. D. Wood Incl. Hydr. Locomo-  
tive Wheel Press, 96" betw. bars.

#50-A Quickwork Whiting Rotary Shear  
¾".

**BOLT, NUT & RIVET MACHINERY, COLD  
HEADERS, THREAD ROLLERS, THREADING  
MACHINES, TAPERS, COLD BOLT TRIMMERS,  
SLOTTERS, HOT HEADERS AND TRIMMERS,  
COLD AND HOT PUNCH NUT MACHINES,  
POINTERS.**

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Barber-Colman type A Model 12 Gear Hobber, 1943.  
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Reed model A21 Thread Roller, 1944.  
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Bigelow 8-2500

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#33 Excella, external, motors 3/60/220-  
440 volts., has dresser and taper attach-  
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12"x30" Morey-Shields, motor 3/60/220-440  
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Practically good as new.

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**42" BULLARD CUTMASTER  
VERTICAL TURRET LATHE,**

**1947 machine, Serial #25200.  
Excellent Condition.**

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1 new Logemann 113-P Baler complete with  
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Packed in original crates. Bale size 18" x 10"  
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### LATE TYPE MACHINE BOLT MAKER

5/16" NATIONAL MACHINERY CO.

A. C. Motor

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Boring Mills, 48" and 72" Gisholt  
Header or Upsetter, 3" Ajax, M. D.  
Grinder, Thompson, 10 x 30 Univ. M. D.  
Lathe, 40" x 25" e. Mackintosh-Hemphill.  
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Press, Trimming No. 8 W&W, and #73-½ Bilas.

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## MOTORS - M. G. SETS - TRANSFORMERS

ENGINEERED AND REBUILT BY SPECIALISTS IN OUR MODERN PLANT

CRANE AND MILL MOTORS—230-VDC				
Qu	HP	Make	Type	RPM
1	265/200	G. E.	MDP-420	350/410
(Spare armature & anti-friction bearings for above motor)				
1	150/200	Whae	MCB-100	370/300
1	150	Whae	MT-5	350
1	100/140	Whae	MCB-90	500/415
4*	100/140	G. E.	MDA-108	430/500
3	100/130	G. E.	CO-1831	675/900
2	85/65	Whae	K-10	635/700
1	75/60	Whae	K-10	425/470
1*	75/100	Whae	CK-10	500/675
5	70/90	Whae	MCA-70	440/400
2	70/90	Whae	MCB-70	440/400
1	50/80	C. W.	FW	575/480
1	50	G. E.	CO-1829	750
1	50/65	Whae	MCLA-121	500/450
3	50/65	Whae	MCLA-60	175/425
1	50	G. E.	CO-1810	725
1	65/85	G. E.	CO-1830	700/650
1	65/85	G. E.	CO-1811	600/500
4	45/57	Whae	K-9	515/470
1	45/57	Whae	KG-9	515/470
2	35/45	G. E.	CO-1810	500/450
1*	35	G. E.	MDA-1044	650
1	30	C. W.	EH	750
1	25/35	G. E.	CO-1828	750/450
1	27 1/2	Whae	K-6	1050
3	35/38	G. E.	MDS-406	575/500
3	35/30	G. E.	MDP-408	600/415
3*	30/28	Whae	MCA-40	600/470
6	19/15	Whae	K-5	630/560

Qu	HP	Make	Type	RPM
3	16/19	C. W.	BW	620/560
1	16/13	G. E.	MDS-406	615/700
1	15	G. E.	CO-2505	700
1	15/19	G. E.	CO-1807	600/525
1*	13/17	G. E.	MDA-103	645/725
1*	13/17	G. E.	MDR-103	645/725

All motors series wound except those marked (\*), which are compound; can furnish these for series operation.

### SYNCHRONOUS MOTORS

3-Phase—60-Cycle				
Qu	HP	Make	P.F.	RPM
1	6000	G. E.	100	2300
1	4350	C-W	100	13,200/6000
1	3000	Whae	80	1800/2100
2	2100	G. E.	100	2300
2	1750	G. E.	100	2300
1	1000	EL. Mech	100	440
1	750	G. E.	80	2300
1	700	G. E.	80	2300
1	250	G. E.	100	2300

With these we can supply—manual, semi or full magnetic, full or reduced voltage control.

Motor Generators of modern design, complete with control—still on their original foundations—available for immediate shipment.  
(3)—G.E. 1500-KW, 250-VDC, 514 R.P.M., cnd., interpole, pole face windings, 2100-HP syn. motors, 8-PF, 13,200-V, 3-p, 60-cy. will re-connect to 6600 V. or 4160-V.

### SLIP RING MOTORS—CONSTANT DUTY

3-Phase—60-Cycle				
Qu	HP	Make	Type	RPM
1**	1800	G. E.	MT-498	2300
1**	1200	G. E.	MT-26	2200
2**	1000	AL Ch	ANY	2200
1	800	G. E.	MT	2200
1**	800	G. E.	MT-20	2200
2	500	G. E.	1-16-M	2300
1**	400	AL Ch	ANY	2200
2	400	G. E.	MT-412	2200
1	250	Whae	CW-937	440

From our stock we can furnish manual and magnetic primary and secondary controls up to 3500-HP.

### MOTOR GENERATOR SETS

Qu	KW	Make	RPM	Volts DC	Volts AC
1(3-U)	2400	Whae	720	600	2400/4800
3	1000	Whae	514	600	11000/6600
4	1000	G. E.	514	600	11000/6600
1	1000	G. E.	514	600	2300
1	500	C.W.	720	275	2300/440
1(3-U)	500	Whae	1200	250	440
2	500	C.W.	720	275	2300/440
2	250	Whae	1200	125/250	2300
1	200	Ridgway	900	275	2300
1	150	G. E.	720	250	2300/440
2	150	Whae	1200	250	2300

We can furnish any of these sets with exciters and VARIABLE VOLTAGE CONTROL engineered and rebuilt to your requirements.

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10-ton Champion 100' span between ground rails, 31' overhang one end, 23'9" other end, 45' lift, with 1200' of 100# rail. Now 550-VAC, will arrange for 220/440-VAC or 230-V.D.C. AVAILABLE FOR IMMEDIATE INSPECTION AND SHIPMENT. In excellent condition. The kind of crane that is seldom on the market.

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Late Type—Modern  
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NUT-TAPPERS—3/4", 6 Spindles (2)  
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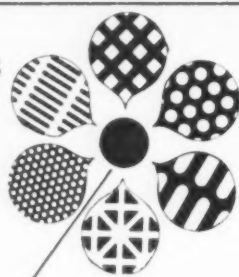
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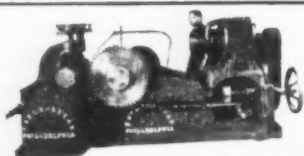
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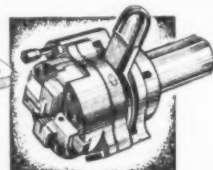
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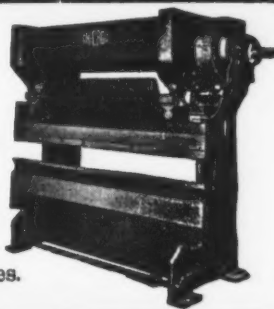




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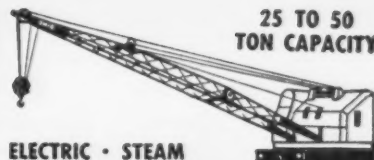
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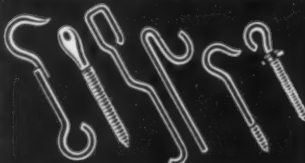
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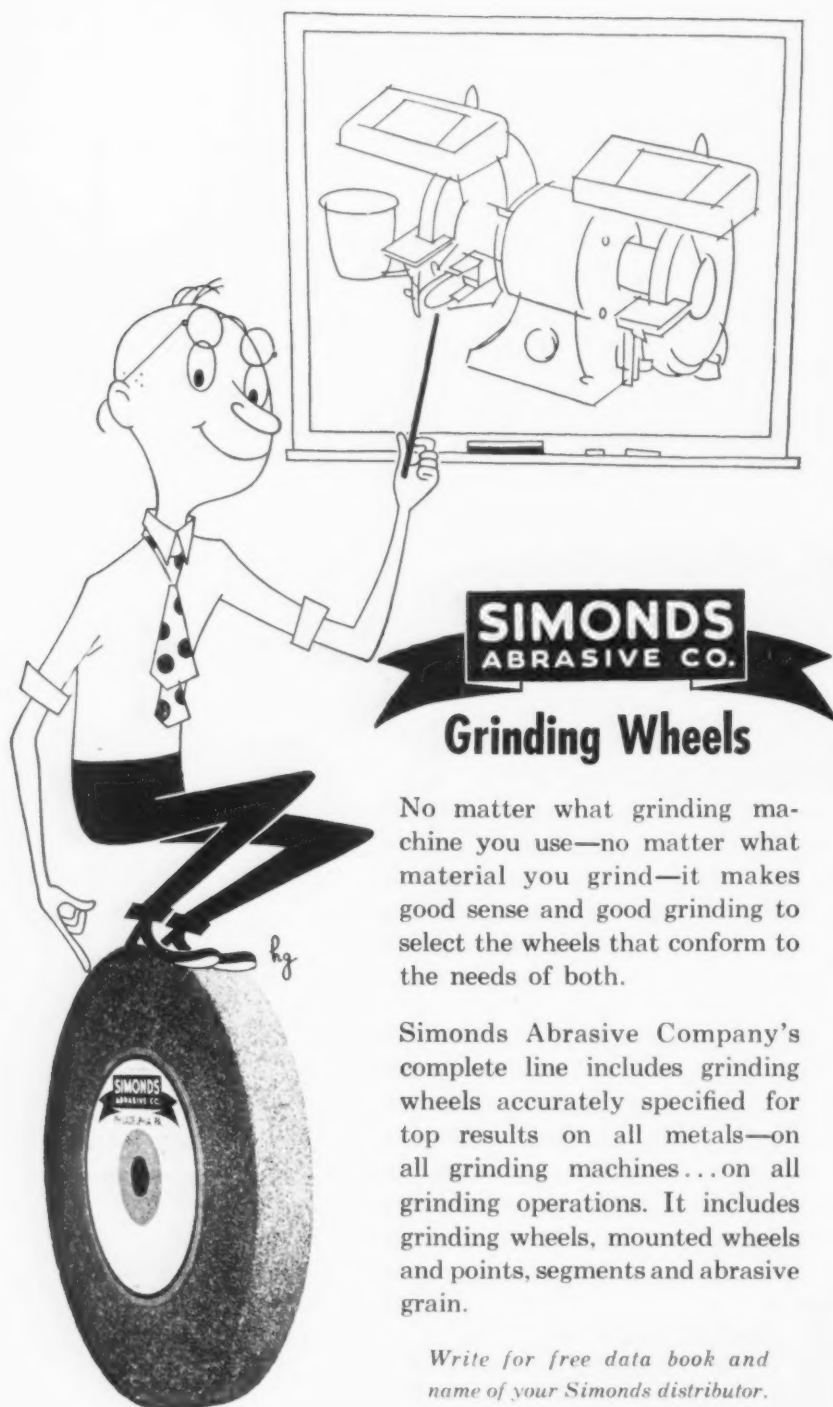
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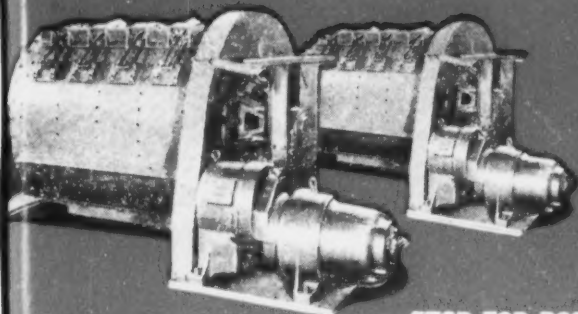
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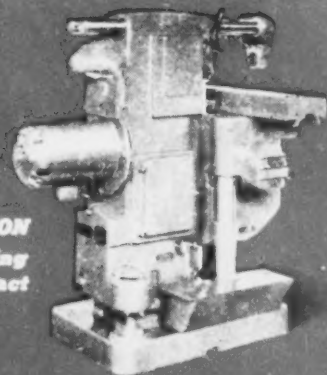








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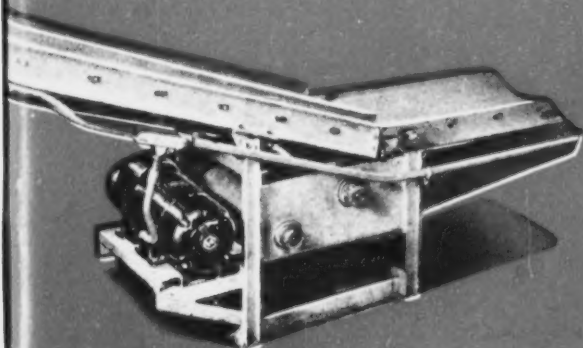


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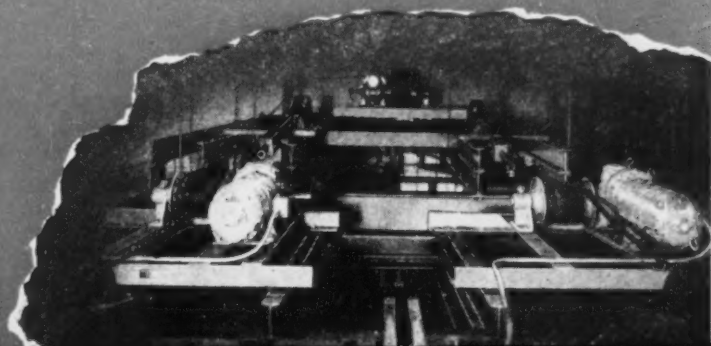


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